BCAS
CAMPUS
BRITISH COLLEGE OF
APPLIED STUDIES

BCAS International
Research
Symposium
2 0 1 9

>>> DEVELOPING A SOCIALLY RESPONSIBLE
DIGITAL ECONOMY FOR SRI LANKA >>>

PEOPLE

BUSINESS

DATA

DEVICES

PROCESS

ISSUE 05 - DECEMBER 2019

Building Careers – Transforming Lives

Vision | Mission

Vision
To become the premier private university in the region

Mission
Produce quality human resources with ethics and social responsibility, having innovative thinking and analytical skills to serve humanity

BCAS International Research Symposium 2019

6th December 2019 (Friday)
9.00 am
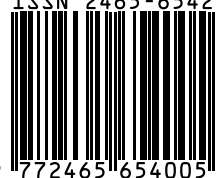**@ BCAS Mount Campus**
(54, Galle Road, Mt. Lavinia)

21

YEARS OF
TRUST & EXCELLENCE
IN HIGHER EDUCATION

ISO 9001:2015
CERTIFIED

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SCHOOL OF ENGINEERING

BCAS CAMPUS

Established in 1999, British College of Applied Studies (now popularly known as BCAS Campus) has rapidly grown into a leading educational provider in Sri Lanka with a large number of students more than 4,000. BCAS Campus has strong international collaboration, especially with the University of Wolverhampton (UK), London South Bank University (UK) and Pearson (Edexcel) UK.

Besides two main campuses in Colombo (City Campus) and Mount Lavinia (Mount Campus) in the Western Province, BCAS Campus has branches in five key cities in Sri Lanka, namely, Kandy, Jaffna, Kurunegala, Batticaloa and Kalmunai with a highly successful overseas centre in the State of Qatar. Plans are under way to open more overseas centres.

Having won 17 awards nationally & internationally, the institution is highly esteemed for its exceptional quality, international recognition and market relevant training. To top it all, BCAS Campus was selected as the First of the Five Top higher education providers in Sri Lanka in 2013 by an independent survey conducted by an organization hired by Sri Lanka's pioneering business magazine LMD. Currently more than 4,000 students follow their chosen courses of study at BCAS Campus - Quantity Surveying, IT, Law, Business Management, Telecom Engineering, Civil Engineering and Biomedical Science. These courses are delivered at HND Pearson (Edexcel) UK as well as at degree levels. MSc in Construction Project Management, MBA and LLM (Professional Practice) are the three Master's programme delivered by us.

International Collaborations

Our relationship with the University of Wolverhampton, UK was established in 2006 with an agreement to transfer students completing BTEC HND in QS to do their BSc (Hons) in QS in the UK. Thus the first batch of 30 students were transferred to the university in 2006. This trend continued steadily and more than 450 students earned their degrees directly from the University between 2006 and 2012. With the introduction of in-country delivery of degrees at BCAS Campus in Colombo in 2011 and formalization of the first agreement to that effect, the number of students opting to complete their Top-up Degrees right here in Sri Lanka gradually increased. Thus making it the most popular option among Sri Lankan Students.

Thereafter, successively, several MOUs were signed to deliver the university's selected degree programmes in Colombo at BCAS Campus itself – BSc (Hons) QS, LLB (2011), BABM, MBA (2012), MSc - CPM (2014), LLM Professional Practice (2015), BSc (Hons) Biomedical Sciences (2015).

The other university we work with is London South Bank University, UK and we deliver their BSc (Hons) degree in Commercial Management (QS) and BSc (Hons) Civil Engineering while our relationship with the Edexcel, UK (now known as Pearson, UK) dates back to 2002.

Building Careers - Transforming Lives

BCAS in Brief

1999	• Founded as IT/English training institute in Kandy
2000	• BCAS Placement division, placed 12 students-UK Uni's
2001	• Established 1st BCAS Centre in Colombo
2002	• Setup the 'Corporate Office' in Colombo • Launched BTEC HND in IT/Computing
2004	• Vocational Courses in Construction, placed students in Industry. • MoU with Many UK Colleges and Universities • Expanded Kandy Campus /launched HND Computing /IT
2005	• Launched BTEC HND in QS • Launched Vocational Programme – 'CAD and Building Studies'
2006	• Articulation agreement with the UoW for students' progression • Launched Vocational Programme – 'Teacher Training'
2007	• 1st batch of students transferred to UoW • Established HND QS Centre in Dehiwala Campus
2008	• Set up BCAS Qatar Campus / Launches HND in QS • BTEC HND in Business Management
2009	• BTEC HND in Electrical / Electronic (Telecom) • BTEC HND in Law
2010	• QS Top-Up Degrees in Qatar Campus - Bsc (Hons) QS- UoW • QS Top-Up Degrees in Dehiwala Campus - Bsc (Hons) QS- UoW
2011	• BTEC HND in – Biomedical Science - UoW • Established Batti Campus • EDEXCEL UK Award - Fastest/Most Outstating BTEC HND Centre • ISO 9001 – 2008 Certified
2012	• BM Top-Up Degrees in City Campus - BA(BM) - UoW • LLB Top-Up Degrees in City Campus - LLB- UoW • Established Wayamba Campus • MBA – Launched in City Campus- UoW
2013	• BTEC Level-7 Strategic Management – MBA Pathway- UoW • BTEC HND – Civil Engineering • Recognized by LMD Magazine as the "No.1 Private Education Provider
2014 2015	• MSc Construction Project Management- UoW • MSc Strategic IT Management- UoW • MSc IT Management- UoW • BSc (Hons) Management of IT / BSc (Hons) Computing - UoW

BCAS Organization Chart

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┌─────────────┐   ┌──────────┐   ┌─────────────┐
│ BOARD OF    │───│ CHAIRMAN │───│ BOARD OF    │
│ DIRECTORS   │   │          │   │ GOVERNANCE  │
└─────────────┘   └──────────┘   └─────────────┘
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Admin & Human Resources	Finance	Business Development	Operations	Branch Network	Academic
Manager Human Resources	**Director** Finance	**General Manager** Business Development	**General Manager** Operations	**Managers** & Directors	**Dean** Academic Affairs
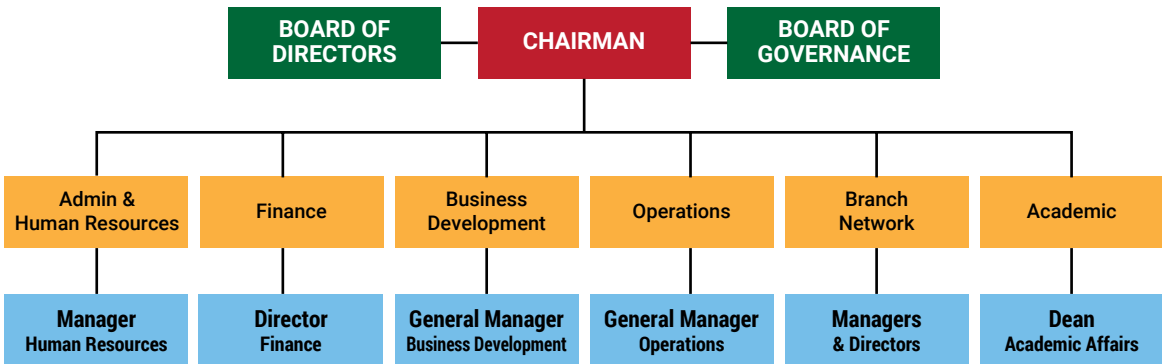
Board of Governance

Chairman, CEO - Eng Abdul Rahman

Director - Eng M Mafeel

Director - Mr J Niwas

Dean Academic Affairs - Prof K Hirimburegama

General Manager Operations - Eng Kawther Musthafa

General Manager Business Development - Mr M Isthiquar

Justice Saleem Marsoof PC, Retired Judge of the Supreme Courts of Sri Lanka

Mr S Asiriwatham, FCA SL, Former President Partner & Country Head - KPMG

Prof. Rohan Rajapakshe, Former Director - Ministry of Higher Education

Dr Mahroof, Head, Civil Engineering - University of Peradeniya

Dr K. Kobindraraja - Former Vice Chancellor - Eastern University, Sri Lanka

Dr Yasa Siriwardana - Director - Medi Calls

Prof K K Y W Perera - Former Secretary - Ministry of Power & Energy,
                    - Former Vice Chancellor - University of Moratuwa

Divisions / Academic Schools

- BCAS School of Legal Studies
- BCAS School of Management
- BCAS School of Building Studies
- UG / PD Division
- BCAS Placement Division
- BCAS School of Computing
- BCAS School of Engineering
- BCAS School of Health Science
- BCAS English Language Teaching Unit
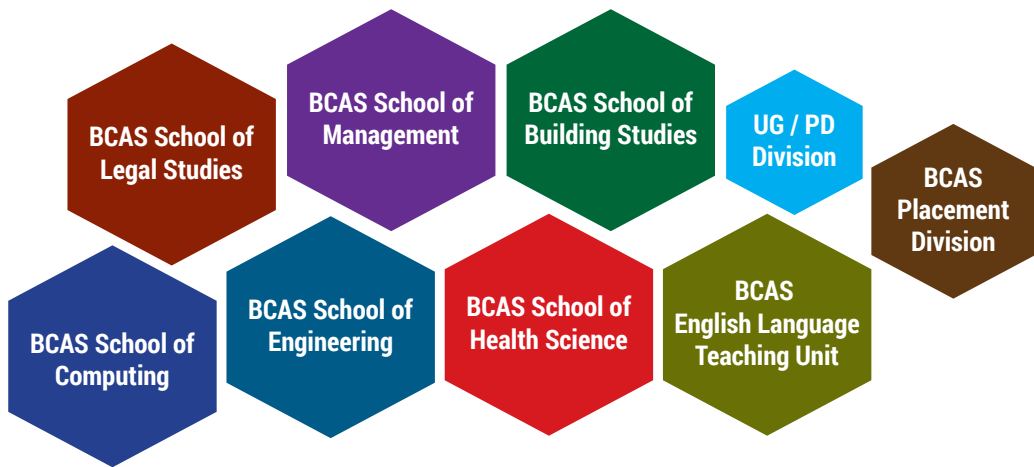
Quality Management Structure

- Board of Management
- Academic Syndicate
- Board of Examination

Service Divisions

- Student Placement and Study Abroad Division (Located in BCAS)
- PAC Asia
- Student Counselling Division (Located in BCAS)

Qualification Frameworks

5 | MSc PGD (SLQF Level 7 & 8)

4 | BSc (Hons) (SLQF Level 5 & 6)

3 | BTEC HND (SLQF Level 4)

2 | Foundation Course (SLQF 3/NVQ 3)

1 | After O/L

After A/L

Certificate 1
Advanced Certificate 2
Diploma 3
Higher Diploma 4
Bachelors 5
Bachelors Hons. 6
PG Cert. PG Dip. 7
MA, MSc 8
MPhil, DM 9
PhD, MD 10

Sri Lanka Qualification Framework (SLQF)

Sri Lankan National			BTEC/UK	
	SLQF	NVQ -	BTEC-QCF (UK)	
Doctorial Degree, MD	SLQL-10		QCF-L8	PhD/DPhil
M.Phil., Masters (Research)	SLQL-9		QCF-L7	Master's degrees
Master (Taught + Research)	SLQL-8			
Master (Taught), PG-D, PG-C	SLQL-7			
Honours Bachelor	SLQL-6		QCF-L6	Bachelor's degrees, eg BA, BSc
Bachelor Degree	SLQL-5	NVQ-7		
High Diploma	SLQL-4	NVQ-6	QCF-L5	BTEC HNDs (Higher National Diplomas)
Diploma	SLQL-3	NVQ-5	QCF-L4	BTEC HNCs (Higher National Certificates)
Advanced Certificate	SLQL-2	NVQ-4	QCF-L3	BTEC National Diploma
Certificate	SLQL-1	NVQ-2, 3		BTEC National Extended Diploma

Quality Assurance

External Standard Verification by

Approval, Recognition Partnership

BCAS Research Symposium 2018

2015 RELEASE

2016 RELEASE

2017 RELEASE

2018 RELEASE

INTERNATIONAL & LOCAL AWARDS

Gold Award
Pearson, UK
2019

Excellence in
Training Award
Overall Award based on
results based training
Asia Pacific HRM Congress
2019

> Best Employer Brand Award

> Outstanding Contribution
to the Cause of Education

> Award for Excellence in Training

World HRD Congress
13th Employers Branding Award
Le Meridien, Singapore
2018

BTEC
Gold Award
2018

Platinum Partner
No.1 BTEC Centre
in Sri Lanka
2017

Asia's Training
Excellence Award
2017

Best Employer
Brand Award
2017

Platinum Partner
No.1 BTEC Centre
in Sri Lanka
2016

Educational Institute
with Best Academic
& Industry Interface
2016

Visionary Leadership
Award for
BCAS Chairman
2016

Academic
Impact Winner
2016
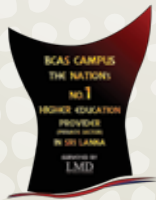
Ranked as No.1
Higher Education
Provider
2014

BTEC
Gold Partner
2013

Performance
Excellence Award
2011

Fastest Growing
BTEC Centre
2010

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Contribution of Road projects to develop a social, cultural and digital economy of the country - A study on Colombo - Katunayake expressway

M A Musharraff, T Vidhurshan, J M Ruslan

BTEC HND in Quantity Surveying & Construction Economics

British College of Applied Studies

Abstract

Sri Lanka is one of the fastest-growing nations in the world, but poor infrastructure facilities have become a major problem for the country's growth, affecting economic development. It's a well known fact that the construction industry plays a major role in the development of the country. Most developing countries such as Sri lanka face lot of difficulties to uplift the road infrastructure because of unstable economic conditions and lack of investment. The Sri Lankan Government has undertaken a number of road projects to improve the country's transport network.

This research paper comprises a case study on Colombo – Katunayake expressway (CKE) and how it has impacted and contributed to the socio - cultural and digital economy. The study analyze about the history of CKE , and the problem faced during the in construction. The study also suggests how the road projects contributes to social, cultural , digital and economy growth of the country. To achieve the aim of the research, structured questionnaires have been sent to relevant stakeholders and to the Industry professionals. And previous studies, journals were used to prove how the road projects contributed to the social, cultural Economic development of the country.

Author Keywords

Social, Cultural, Digital Economy, Road Construction, Economic Growth, CKE

Introduction

The construction industry plays a key role in the country's development. It has contributed significantly to the total GDP. Not only contributing to the GDP but also it provides people with employment chances, it brings modern technology to the country.

Construction is well known to have a high impact on the acceleration of the economy. Construction Industry activities are also vital to achieve the national socio-economic development objectives of providing shelter, infrastructure, and employment. Most developing countries such as Sri Lanka face many difficulties in uplifting road infrastructure due to unstable economic conditions and lack of investment funds.

Proper Infrastructure gives value to the country and it also helps in the country's growth and brings foreign investment and brings new technology to the country. Infrastructure also has a direct relationship with the development of tourism. Transportation plays a vital role in the development of both international and domestic tourism. (Tamrat, 2016) In the early 1960s, the need for a high-speed connection between Colombo and

Katunayake was first identified to serve the region's rapidly expanding industrial areas (University of Jayawardenepura, 1996), And to reduce Traffic congestion, It also enabled rapid industrial expansion in that area, increase employment opportunities while constructing expressway and after the construction.

Improving road network properly was required in Sri Lanka. Colombo-Katunayake Expressway which was built after first stage of southern Expressway (E01). Colombo – Katunayake expressway is the second Expressway of Sri lanka.

The study also shows how bio – diversity have been destructed while constructing, History of CKE, and the procurement method used in the construction.

The main outcome of this research is to prove how the CKE and how road projects have impacted in the economy .

Experimental
While there are several studies carried out on the Road Projects Impact on the economy very few researches done on the Colombo – Katunayake Expressway, and combing the both expressway and economy.

To achieve the aim of the research, structured questionnaires have been sent to relevant stakeholders and to the Industry professionals. And previous studies, journals and documents related to the expressway were used to prove how the road projects contributed to the social, cultural Economic development of the country.

Data were collected by using structured Questions that are created in a way to understand by the construction and Non – construction stakeholders. But questionnaire mostly focused on construction stakeholders for the convenience and betterment of the research. Construction and economical Journals and studies have been briefed and studied to prove and to develop the research.

In conclusion, the researchers have put forward some suggestion and recommendation. In addition, this research study will be a base as a document for the researchers and for those who are doing the study on the same.

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Feasibility of off-site modular building in Sri Lanka

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British College of Applied Studies, Kalmunai, Sri Lanka

Abstract

Off-site construction is one of the evolving construction techniques which was adopted to construction industry from manufacturing industry to prevent the insufficient provision in the conventional construction. The modular buildings are one of the categories of the off-site construction which has the highest possibility of off-site works. The aim of the research is to investigate the complete modular building feasibility through in off-site construction. A mixed approach was adopted where semi-structured questionnaire survey was followed to gather data and analyzed through Relative Importance Index (RII) method. Developed questionnaires were distributed among the professionals, who had knowledge or involvement in this area. The survey findings presented as the significance of factors affecting the off-site transformation of building elements, the appropriate individual components for modular building, the feasibility of off-site transformation of those building elements, the suitable type for off-site feasibility under each element, and the positive and negative factors supporting the individual components feasibility.

Author Keywords
Feasibility, Off-site construction,

Introduction and Literature Synthesis

Yosef and Chen (2015) identified the challenges such as lack of skilled workforce, transportation of material to the site, safety precautions and environmental degradation but the leading innovations are required when to change the current state of the construction industry to overcome several challenges. An identified solution for these practical issues is reducing the work in onsite and do off-site construction works and finally assemble the finished components in on site which is called off-site construction. Peter (2016) depicted that, the off-site construction designs save 25 percent cost compare to traditional construction and furthermore the off-site building construction provides 5-10 percent discount from the bespoke building. Moreover, the offsite construction is a logical alternative of build onsite, it not only reduce the inefficiency in conventional construction but also it has several advantages such as quality improvement, cost saving, speed of construction (Merrick, 2009).

The modular construction concept has become as most popular in the construction industry in last two decades because it is more efficient, greener and affordable alternative for delivering building projects (Lawson, Ogden, and Bergin, 2012). The application of modular construction is found mainly in general building construction, particularly apartment buildings, schools, hotels, cities, floating projects, and other buildings where units are repetitive (Li, Al-Hussein, Lei, and Ajweh, 2013). The major advantages which were identified through literature review were cost reduction, speed of construction, improved quality, improved life cycle sustainability, improved productivity

and workmanship (Gibb and Isack, 2003). The components of modular building are foundations, Modules and Mechanical Elctrical and Plumbing(MEP) services (Gispert, 2015)

Methodology

For this research, the snowball sampling method is appropriate due to difficult to find potential respondents. After a comprehensive literature review was conducted in the previous chapter, to implement this research, a semi- structured questionnaire survey was used for the collection of data. In addition to that, for this research a single case study has been selected due to the research which was carried out of very rarely in Sri Lanka. The collected data were analyzed through RII, mean rating, percentage and manual content analysis.

Respondents of the survey

Professional background	No	Response
Project managers	11	9
Engineers	24	18
Quantity surveyors	7	5
Total	39	32

Table 1: Professionals Background
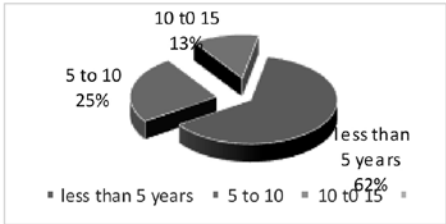
Figure 1: Professionals Experience

Out of the thirty-nine, only thirty-two responded to the questionnaire. This yielded 82% response rate. 62 percent of the respondents has less than 5years experience in modular building and the 25 percent of the respondents has 5 to 10 years' experience and the 13 percent of the respondents has more than 10 years' experience in the related field of study.

Research Experiments

MAIN FACTORS	RII	RANK
Economical	0.819	1
Environmental and natural	0.756	2
Time	0.719	3
Quality	0.694	4
Safety	0.689	5
Transport and logistics	0.687	6
Technical and skills	0.669	7
Market culture and industry	0.625	8
Design	0.606	9
Supply chain and procurement	0.600	10
Maintainability	0.548	11
Regulatory	0.544	12
Structural aspects	0.527	13

Table 2: Significance of Main Factors

It was identified through literature review the thirteen main factors are the significant factors affecting the off-site transformation of building elements in global context. Out of them the three main factors such as economic, environmental and natural and, Quality are the most significant factors and maintainability, supply chain procurement and regulatory were considered as the less significant factors. However, all the factors were significant due to having RII value more than 0.5.

Out of the thirty-nine, only thirty-two responded to the questionnaire. This yielded 82% response rate. 62 percent of the respondents has less than 5years experience in modular building and the 25 percent of the respondents has 5 to 10 years' experience and the 13 percent of the respondents has more than 10 years' experience in the related field of study.
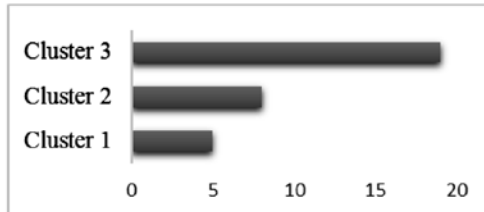
Figure 2: Mean Value of Clusters

Cluster 1 - Foundation, modules, roof and MEP services

Cluster 2 - Foundation, and Modules

Cluster 3 - Foundation, Modules and MEP services

It was appeared that, the most appropriate individual elements for the modular building in Sri Lanka were Foundation, modules and MEP services. Roof, and others elements were used for facilitating work from the responses of the respondents.

The foundation has the less transformation feasibility whereas the modules have higher transformation feasibility 70-80%. While analysing the modules, the modules has constituted of sub elements which feasibilities also analysed. It was cleared from that; the Doors and windows have the highest transformation feasibility and the finishes have less transformation feasibility. The floors and slabs have equal feasibilities as 70-80%.
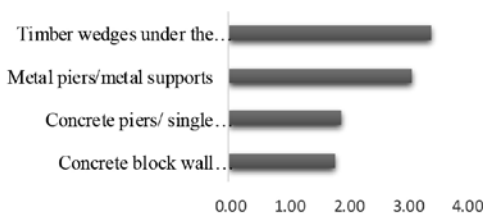
Figure 3: Mean Value of Different Foundations
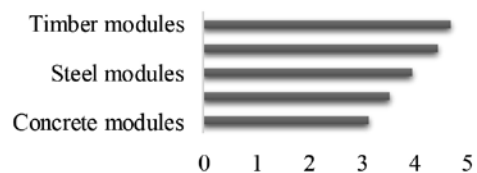
Figure 4: Mean Value of Different Modules
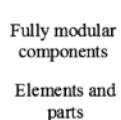
Figure 5: Mean Value of Different MEP Elements

Under the section of assessing the feasibility through different elements of modular building the timber wedges foundation has the highest transformation feasibility and the concrete block wall foundation has the less transformation feasibility. Further, under the category of modules the timber module has the highest transformation feasibility and the concrete module has the less transformation feasibility while the composite modules such as Steel-timber, concrete-steel, and steel modules have remained within these two. Further, fully modularized MEP components have the higher transformation feasibility whereas the elements type MEP services have less transformation feasibility.

Limitation of Research
This research is mainly focused on the building projects in Sri Lanka. In this study, under the modular building, the research is limited to single story modular buildings in the Sri Lankan context. Because, there were some limitations at the moment of collecting data because professional who are involving building project related to modular buildings are very rare in Sri Lankan context.

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Management

Influence of Electronic Word of Mouth in Social Media on Undergraduates' Purchase Intentions. A South Eastern University of Srilanka's Perspective

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British College of Applied Studies, Kalmunai

Abstract

The influence of Electronic Word of Mouth (eWOM) on undergraduates' purchase intentions has long been known. However, the development of social media has brought a new viewpoint to eWOM through enabling users to communicate with their existing networks on the Internet. On the other hand, through social media, online platforms, users are able to exchange their opinions and experiences about products or services with familiar people, friends and acquaintances. This new system of eWOM has the potential for greater impact on consumers. Therefore, the aim of this research is to examine the influence of eWOM in social media on undergraduates' purchase intentions. It was validated through (SPSS) based on surveys of 155 social media users in the SEUSL. Information Credibility and Needs of Information are statistically significant and they uniquely account for the variance in the undergraduates Purchase Intention. Information Quality and Attitude toward Information are not statistically significant therefore, they do not account for any variance in the dependent variable.

Keywords

Electronic Word of Mouth (eWOM), Social Media, Purchase Intention

Introduction

Transmission of information and experiences between the consumers means 'Word of Mouth'. The people who lived in the earlier period and also middle period they exchange their information when they meet face to face. Appropriately after that the both of the development of information technology and the growth of media at the 21stcentury together have made a revolution in the system of public communication.

Electronic Word of mouth (EWOM) is the process of conveying information from person to person via Internet and plays a major role in customer buying decisions. In commercial situations, eWOM involves consumers sharing attitudes, opinions, or reactions about businesses, products, or services with other people. EWOM marketing is influential, multifaceted, and typically hard to influence. Positive eWOM is considered a powerful marketing medium for companies to influence consumers. eWOM communication functions based on social networking and trust: people rely on families, friends, and others in their social network. Research also indicates that people appear to trust seemingly disinterested opinions from people outside their immediate social network, such as online reviews. This form is known as online eWOM (OWOM) or electronic WOM (eWOM). Therefore this study will be exploring the determinants of eWOM information on social media that influence undergraduates' purchase intentions among South Eastern University students perspective.

The aim of this research is to find out the determinants of eWOM information on social media which influence undergraduates' purchase intentions. To do so contextual study was using to examine the following objectives.

To develop theoretical models to explain the determinants of eWOM information on social media which influence undergraduates' purchase intentions.

To evaluate relationship hypothesized in the theoretical models in order to answer research question.

To discuss the results and findings and position them within the existing eWOM literature. To recommend Sri Lankan marketers to formulate better marketing strategies to understand the dynamic of eWOM on social media.

Literature Review
Social Media gives great number of advertisement to consumers. By using mobile phone consumers can obtain information regarding brands, products and services. As information has increased on the valuable number of advertisements, making a decision has become in a superior way and in a superior way difficult for consumers. (Sen, S. and Lerman, D. , 2007) determined that consumers agree with former consumers' opinions and experiences more than marketers' classified advertisements.

If customers take eWOM messages into consideration, it is able to at once grow to be purchase movement both through the groups' web sites and thru purchasing websites. This makes eWOM very powerful and leads researchers to be inquisitive about how eWOM affects purchase purpose.

Social media encourages people to construct and maintain their friends' community by using social or professional Interplay (Trusov, M., Bucklin, R.E. and Pauwels, K. , 2009).

EWOM still keeps amongst anonymous people via online review, social media has brought with it a brand new, pioneering attitude in that it permits eWOM to take region amongst folks that already know every other (Erkan.I, 2014)

Methodology
This study develops a theoretical model to identify the determinants of eWOM information on social media which influences consumers' purchase intentions.
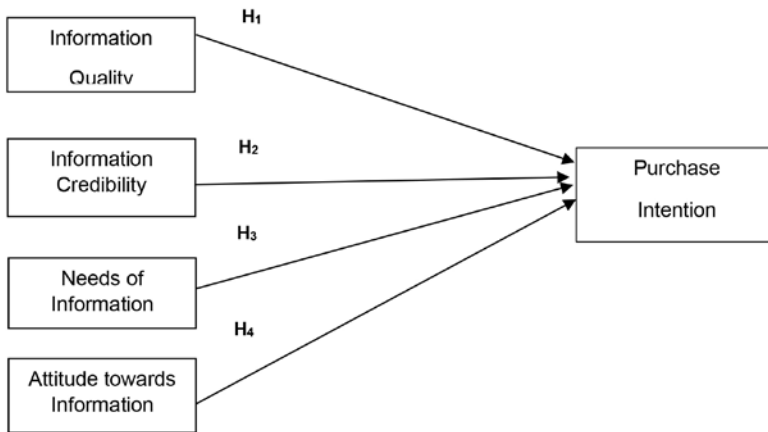
Figure 1.1: The Proposed Research Model

Data Analysis

On this studies data from a total of 155 university students in SEUSL. The sample size of 155 is deemed appropriate whilst the population constitutes of 4343 of people (at 95% confidence degree and 5% margin of errors) (Krejcie, R. V and Morgan, D.W., 1970) (Sekaran, 2006).

From the survey the majority 89% of the respondents use social media websites every day. 7.1 % of the respondents use social media four to five days per week; while the usage of 3.2 % of the respondents' is only once a week, and the usage of 0.6 % of the respondents' is Once a month.

33.5 % of the respondents had been read customer review always while 31% of the respondents read sometimes. 23.2% of the respondents are often read customer review, 9.7% of the respondents are read rarely and 2.6% of the respondents never read customer review before making purchasing decision.

A regression analysis was performed with Purchase Intention as the dependent variable and Information Quality, Information Credibility, Needs of Information, and Attitude toward Information as the predictor variables. Multiple regression analysis was conducted with Multicollinearity diagnosis.

$R^2 = .61$; taken as a set, Information Quality, Information Credibility, Needs of Information, and Attitude toward Information account for 61% of the variance in Purchase Intention. From ANOVA test it can be observed that the overall regression model is significant, $F = 58.8$, $p < .001$, $R^2 = .61$.

Conclusion

Overall finding suggest the amount of unique variance each predictor accounts for statistically significantly. Variables Information Credibility ($p < .001$), and Needs of Information ($p < .001$) are statistically significant and they uniquely account for the variance

in the undergraduates Purchase Intention. The independent variable Information Quality (p>.05) and Attitude toward Information (p>.05) are not statistically significant therefore, they do not account for any variance in the dependent variable. In summary, the results revealed that 2 hypotheses are supported and 2 hypotheses are not supported.

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Impact of Dividend Policy on Share Prices of Listed Companies in Sri Lanka: Special Reference to Banks Finance and Insurance Sector

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Abstract

It is felt strongly that Payment of dividends influence investors to the value of stock and also dividend decision is the most important decision in the company's point of view. Therefore payments of dividends decrease the internal financing required for the investment opportunities. So this will avoid the growth of the firm, which in turn affects to the value of the stock. This study has been under taken to identify the impact of dividend policy on share prices of listed companies in Sri Lanka and to identify the relationships between the Earning per Share, Net Assets per Share and Share market price. In the methodology the secondary data was collected from the annual reports of those companies of Bank finance & Insurance sector have registered in CSE. The study sample consisted 28 companies of that sector for a period of 5 years, since 2014 to 2018. The analysis shows that low negative relationship between the dividend payout ratio and market price of shares while low positive relationship between the dividend plowback ratio and market price of shares. This research identified High positive relationship between Earning per Share (EPS) and Net Asset per Share (NAPS) towards the share market price. It is also fund that the Earning per Share has been highly affected to the share prices than the Net Asset per Share (NAPS) in Colombo Stock Exchange.

Author Keywords

Dividend Payout Ratio (PYOT), Dividend Plowback ratio (PLWB), Earning per share (EPS), Net Assets per share (NAPS), Market Share Price (MSP)

Introduction

An organization's share is influenced by many factors including dividend, size of the firm, and management team among others. Payments of dividend is important, as this is the main means by which shareholders obtain a return on their investment or shares in a given business (Ross et al, 2010). Management team rely on a dividend policy to guide them on a level of dividends to be issued to stockholders. Therefore, dividend policy plays a primary role in determining the company's dividend payout pattern. Fumey and Doku (2013) outline that dividend payout relates to a proportion of total profit remitted to ordinary shareholders as dividend. Dividend payout ratio is considered vital in providing insight on a company's dividend policy to its shareholders.

Some companies are paying dividend and other companies are not paying dividend for their shareholders. If a company will pay dividends it may become one of the reasons for increasing to market price of share in the short term because demand for share can be increased due to expectation of dividends. If a company will not pay dividends that means retained earnings are used for making investment. It may be a reason for increasing shareholders wealth in the long term, thus demand for share can be increased.

Ultimately company goals are maximizing the overall shareholder's wealth. Therefore, more attention is required concerning about activities which affect the wellbeing of shareholders. It can be measured by the dividend received, but more accurate method is the market value of a stock. But shareholders think dividend yield has most risky than capital gain.

Methodology

This research was conducted to find out the impact of dividend policy on share prices of listed companies in Colombo Stock Exchange. Therefore, data was collected from the annual reports of the selected companies in Bank finance & Insurance sector. The study sample consisted of the 28 companies from that sector for a period of 5 years, since 2014 to 2018. This research focused on four variables such as payout ratio, plowback ratio, earning per share and net assets per share. The following variables are identified to find out the impact of dividend policy on share price.

Independent variables

Payout Ratio

Plowback Ratio

Earning per share

Net Asset per share

Dependent variable
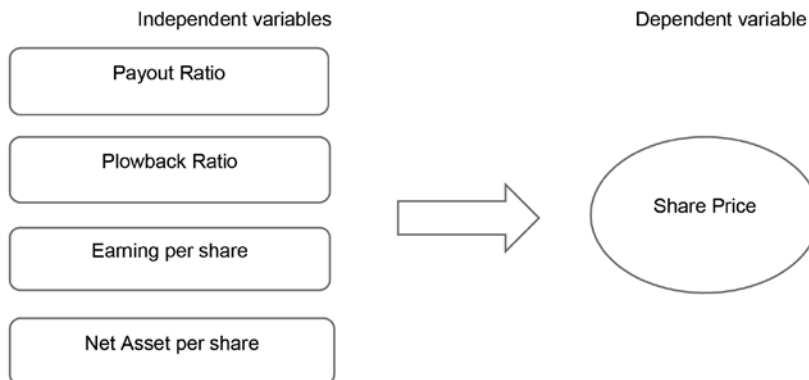
Share Price

Figure 1: Research Model

According to the literature review the hypothesis are developed as follows:
H1: There is a relationship between payout ratio and share price.
H2: There is a relationship between plowback ratio and share price.
H3: There is a relationship between earning per share and share price.
H4: There is a relationship between net asset per share and share price.

Data Analysis

The secondary data was evaluated using SPSS, which involved using multiple regression analysis and correlation analysis.

Variables	Pearson Correlation
Dividend payout ratio	-0.321
Dividend plowback ratio	0.321
Earning per share	0.864
Net asset per share	0.784

Table 1: Relationship between independent variables and dependent variable

Correlation analysis is used to understand the strength of relationship between two variables. As it is observed the correlation values are found to be mixed (both positive and negative relationship) in this study. When the relationship between the dividend payout ratio and share market price has been examined, it can be identified this kind of correlation between these two variables. As the correlation has become negative, it has depicted that there is a negative relationship among the market price of share and dividend payout ratio. By existing correlation of -0.321, it has suggested that there is a low negative linear relationship between the variable concerned. It has elaborated that there is a relationship between dividend plowback ratio and share market prices. It was a positive relationship. By having the correlation of +0.321, it has suggested that there is a low positive linear relationship variable concerned. It showed that 0.864, it has suggested that there is a high positive correlation with earning per and share market prices. The table has illustrated there is a positive relationship between net asset per share and share market price. By existing correlation of 0.784, t has also suggested that there is a high relationship between the variables concerned.

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.886	0.785	0.768	25.74394

Table 2: Regression Analysis

The value of "R" implies coefficient of correlation, value of "R" is 0.886 it depicted that there is a high positive correlation between independent variables entered in to the model with the dependent variables of share market prices. Value of R2 is 0.785, it means that 78.5% of variance of share market price is explained by PWOT, PLWB, EPS and NAPS of the regression. Further R2 of 0.785 implies the independent variables are unable to explain 21.5% of the variance of the share market prices. Thus other 21.5% of the variance might be describe by some other factors inflation rate, gross domestic production, interest rate and political factors etc. on the other hand when considering

share market price of 78.5% depend on the dividend policy of listed banks finance an insurance sectors in Sri Lanka.

Conclusion
In accordance with findings Karl Pearson product movement of correlation coefficient, the relationship between dividend policy a share prices was measured and it is concluded it's having a low negative relationship. That means when companies increase payout ratio, market price will be decreased because when increasing payout ratio, it is a reason for decreasing the plowback ratio. When decreasing payout ratio that would affect to share market price in favorable manner. With regards to find low positive relationship between dividend plowback ratio and share market price. That means when companies take decision for increasing the divided plowback ratio, they can invest retained earnings in the profitable investment opportunities. Based on the product movement a high positive relationship between earning per share and net asset per share towards the share prices. According to the results of multiple regression analysis, it has implied that earning per share is more significant than the net asset per share.

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Impacts of Human Resources Management System on Organizational Performance. A Case Study Based on the Banking Sector in Ampara District

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Abstract

Human resource information system is a system that is used to collect, store and disseminate the information related to the human resources. Human resources are valuable assets of the organization and understanding its behaviors are very complicated for the organization. Consequently, the organizations are emerged to implement the system to maintain the human resources. In the current era banking sector faced many problems to manage the employees such as higher employee turnover, recruiting the right employee and providing the training, difficult to manage the leaves, poor performance evaluation and etc. So that they converted the human resource function into HRIS. Now the needs have created to measure the impact of HRIS on the organizational performance. The research explores the impacts of human resources information system on organizational performance in the banking sector. The data were collected through the questionnaires and 60% HR administrators and 40% IT staff were participated. The results show that HRIS reduced the cost of recruitment, selection and training so that it leads to increase organizational performance.

Author Keywords

Assets, Human Resource Management, Performance, Turnover, Recruitment,.

Introduction

Organizations wanted to predict the changes around their internal and external environment in order to beat the brutal competitive conditions. In the internal environment human resources became a strategic resource to control the organizational performance. Strategic human resource management provides the one of the mechanism to meet the competition. Globalization and digital revolution enhance the environmental monitoring process.

The HR functions of organizations are changing rapidly, technological changes bring the human behavioral changes. Social and organizational changes provides pressure on HR professionals to provide expanded services of a higher quality, faster and seamlessly linked with other corporate functions.

A Human Resource Information System (HRIS) is a systematic approach to store and retrieve the information related to the human resources. It can be said that HRIS is the link between Human Resource Management (HRM) activities and IT. Moving the web based application of HRIS is a cost cutting strategy as well as error reduction within the organization.

The survey conducted among the banks in Ampara district. HR mangers, administrators and employees were participated. Now banks were expanding their business globally. So they have interconnected with other branches as well as their transactions are happing through the networks. HRIS provides new insight to the banks. Through the HRIS they are doing recruitments, selection, reward management and Training and other activities related to HR. Because of that the issues related to the HR function has reduced as well as employees satisfaction also increased.

Literature survey

Organizations change to new HR information technologies for several good reasons such as: HR may want to take advantage of the corporate intranet, save money through self-service, or acquire the most effective software for specialized purposes like pension or COBRA management (Kelly O. Weeks Texas A &M, 1998). The use of an associate HRIS offers incremental leaps in efficiency and within the time interval of many human resource jobs that are traditionally labor intensive. The HRIS helps to eliminate duplication of efforts and to well organize the efforts of the HR staff. The HRIS can even permit the HR staff to shift from data maintenance to the strategic use of human resources. One of the most necessary functions of the HRIS is to facilitate HR planning by enabling organizations to better match and utilize their organizational set of talents and skill. In addition to HR planning, the HRIS enhances HR efficiency, provides cost savings, decreases substantial administrative burden on HR staff, and enables HR professionals to become strategic business partners in organizations (zaki, 2017). Organizational effectiveness programs are important and vital as yardsticks for organizational evaluation in terms respect of the wealth or decline, growth or stagnation and effectiveness or non-effectiveness and development or staggered operation in addition as productivity or non-productivity of an organization (mbugua, n.d)

Methodology

The research was conducted based on the primary data and questionnaire were issued to the HR directors of the bank. The questionnaire include likert - types with five point and open – ended questions were included to investigate the impact of HRIS on the banking sector. The SPSS was used to analyze the data. Descriptive method used to analyze the data. The formal discussion had done the HRIS administrator to evaluate the efficiency of the system.

HRIS ⎯⎯⎯⎯⎯⎯→ Organizational performance

Results and conclusions

In this research 60 % of HR administrators, 40% IT staff were participated. According to the results 85% of them strongly agreed that HRIS makes the works easier than the manual system. 65% of them strongly agreed that HRIS increase the job satisfaction and reduce the cost related   to the HR administration .In the human resource function HRIS has an less impact on recruitment process and training and high impact on strategic human resource decision making process. Further the results showed that HRIS reduce the time related to the recruitments process, training and staff decision making. HRIS reduce the cost related to the cost per hire and training and other paper work. The information effect of the system 90% of information used by the top level manager and

80% of them strongly agreed that HRIS increase the value addition for the banks. The results concluded that HRIS helps the banks in many ways to reduce the cost of human resource and it leads to enhance the performance.

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The Effects of Globalization on Marketing Mix Strategy and Performance of Hardware Sectors in Sri Lanka

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Abstract

Globalization is a main factor that is spoken by everyone these days. Globalization is the process of increasing social, cultural, political and economic interdependence and also it has resulted in several changes in business environment. Globalization plays important role in the business process such as especially in the marketing. Companies need to consider the impact of globalization when they implement the strategies related to marketing mix. The research focuses the effect of globalization on marketing mix strategy and performance of hardware industry in Sri Lankan. Special consideration has given to the marketing mix such as product, price, place and promotion related strategies and performance of hardware industry. Hundred questionnaires were issued to identify the impact of globalization while creating and implementing the marketing mix strategy. The results show that globalization has the significant impact on the marketing mix strategy and performance of hardware industry because the hardware companies need to adopt the international stranded in to the product, to do the digital promotion and to establish wider distribution channel.

Keywords

Business Environment, Digital Promotion, Distribution Channel, Globalization, Marketing Mix

Introduction

Globalization is the spread of products, technology, information and jobs across national borders and cultures. In economic terms, it describes an interdependence of nations around the globe fostered through free trade. Globalization has a great impact on business functions such as human resource management, marketing, finance, operation management. Especially it is having significant role on marketing because of the globalization consumer behaviors have changed to consumed the global products. The company is focusing global based value chain to market their products in the international market. So that companies are setting the strategies in the marketing activities to target global market. Macro - economic, political, technological and organizational factors influences on the globalizations to design the marketing strategy of a company. Hardware sector contains varieties of products like agriculture tool and equipment, power tools, electrical accessories and decorative items. Sri Lanka is mostly depending on international standardize materials of hardware to meet the local customer needs. According to that, the companies are setting the marketing mix to reach the international market. They set pricing strategy, product differentiation strategy and distribution strategy. In this research five export companies were selected to analyses the globalization based marketing mix strategy.

Literature Review

There is no doubt that consumer behavior; mainly for a consumer-centered marketing, is a significant determinant in adopting an organization's marketing strategy and its performance in the hyper competitive environment of universal market. It is implied in marketing concept suggesting an organization should satisfy consumer necessities and wants to make profits (Hossein Nezakati and Maryam Akhoundi., 2013)

Benefits of global marketing is the possibility of generating important economies of scale by standardizing operational marketing and in particular packaging and communication. The speed to market because globalized firms centrally plan and organize new product introductions Worldwide within less than one year; The advantage of creating a unique worldwide brand name and brand identity for the global company. The most significant effect of this advantage is the significant reduction of communication costs by targeting the same segments of consumers on all markets, using the same concept of product. (Remus Ionut NAGHI and Iulia PARA, 2013)

Marketing strategy development is thus a complex feat composed of processes, routines and activities as marketing plans that are designed and executed in order to achieve organizational objectives. The key to strategy making is a thorough understanding of the business environment in which one is operating. The firm's internal resource endowments are some of the key characteristics which may enable or disable strategy making as a company pursues international marketing. (Africa Makasi and Krishna Govender, 2016)

Methodology

The survey was conducted among the marketing staff of hardware companies in Sri Lanka. There are five companies were selected randomly. The research was designed to find out the impact of globalizations on marketing mix such as product, price place and promotion. Hundred questionnaires were issued to the employees of marketing department, 80 % percentage of them were responded. The qualitative data was collected to the analysis. The detailed discussion and interview were tested to gather the data. Secondary data was collected from the company records and publication. Descriptive analysis had done to arrive the conclusions.
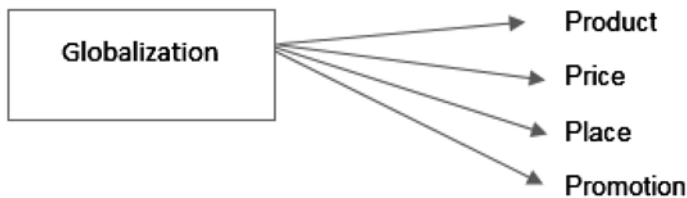
Figure 01: Conceptual Framework.

Results and conclusion

The results show that globalization provides the standardized marketing mix strategies to the hardware companies.65% percentage of responded strongly agreed that globalizations increase the product quality and product differentiation. Because the company target the global market with different need of people with altered perceptions toward the product. Globalization and product strategy is positively correlated with the value of 0.75. If the company wanted to target the global market they have maintain the global standard to enter the international market. 52 % of them strongly agreed that the company should design the price with the discrimination to targets different level of customers across the world. 80% of respond strongly agree that the hardware company should develop global distribution channel to expand their business. 62% of them strongly agreed that globalizations impact to develop different promotional strategy to target the different nation. In overall 72% agree that globalizations has great impact on marketing mix strategy. Hardware companies mainly target the global market to sell their product. So they should design the marketing mix strategy according the global requirement.

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An investigation on impact of Brand Awareness on Customer Purchasing Decision in Local Restaurants: A case study on Bakes by Bella and Flamingo House

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Abstract

The purpose of the study is to decide the factors that influence brand awareness on customer purchase decision. The study was guided by the research goals which are: to identify the challenges faced when creating brand awareness, to analyze suitable marketing practices to develop brand awareness in food retail industry, to find out the extent that the brand awareness impact on customers purchasing intention of food retail industry and to analyze the suitable promotional methods to increase brand awareness in food retail industry.

In this research the target population are the customers who often visit Bakes by Bella and Flamingo House, also the customers are supplementary conscious about the brands of the restaurant. The reason for standardizing the questions is to ensure that all the selected respondents are replying to the same questions and the responses are comparable.

The study has identified the factors that influence in increasing brand awareness which included brand recall, brand recognition, brand association, brand loyalty and brand trust. Also, is was able to find that customers have the potential to purchase if there is a good brand name to the product or the service. The key findings of the study were to find the factors that affect in increasing the brand awareness. The study recommended that the organizations should acknowledge the factors that create brand awareness to improve their annual sales.

Author Keywords

Brand awareness, Brand recall, Brand recognition, Brand equity, Brand loyalty, Brand trust, Purchase decision.

Introduction

This research deliberate on the factors that influence in creating brand awareness in Bakes by Bella and Flamingo House who plays a major role in the food industry. The assumption is that a brand's identification will be understood in the same way by all customers of the target audience. Since consumers understand this intended meaning of the brand, it serves as a useful decision-making heuristic, reducing risk and saving time.

Bakes by Bella is one of Sri Lanka's most popular and the most leading restaurant in the Colombo district. It's important to Bakes by Bella to retain their self in the market by maintaining good relationship with the customers. This research investigates the key factors that impact the brand name of Bakes by Bella, also to provide solutions to improve their brand name among their customers in order to retain their self in the food industry and to help Bakes by Bella to position their self as one of the best restaurant the

Colombo district (Anon., 2017). Even though Flamingo House provide quality food the awareness of their brand is lacking among the people therefore this research is carried out to find out the factors how Flamingo House can increase their customer base by creating a good brand image in the society (Daniel, 2016).

Experimental

Brand awareness is one of the major area the businesses should focus in order to increase the annual revenue and to increase customer base, there are no much studies has been carried out on this topic in Sri Lankan which is, to study the factors influencing in increasing brand awareness of Bakes by Bella and Flamingo House. However, this area has a lack of attention in Sri Lankan context. Therefore, the research attempt to bridge this gap by studying the factor that influence brand awareness in the Sri Lankan food industry mainly focusing on local restaurants such as Bakes by Bella and Flamingo House.

It was proved that the brand plays a major role in customer purchasing decision. In order to keep the brand on top of the customers mind organizations should make the customers aware about the brand in a certain product or service category, therefore in order to recall the brand there should be a strong brand awareness (Subhani & Osman, 2009).

According to Išoraitė (2016), it was proved that loyalty of the customers towards the brand, increased interaction towards the brand and the motivation made towards the customers to purchase the branded product and the service is important in order to increase the brand awareness.

Kumar (2018) found that recalling a brand is very important in order to increase the purchasing decision. Therefore to recall a brand and place the brand on top of the customers mind the brand should be familiar to the customers. If the businesses create an awareness to the brand the customers will be familiar with the brand which leads to an increase purchase decision.

This study follows stratified random sampling because the respondents are selected randomly who visit Bakes by Bella and Flaming House. The investigation includes 60 respondents.

Sri Lankan local restaurants known as the food retail industry can increase their annual sales mainly through satisfying customers need which will lead the customers for an increased purchase decision. As there are large number of competitors for Bakes by Bella and Flamingo House the Brand of the food served should reach the customers in a positive way in order to stand out from their competitors.

In order to increase the brand awareness of the local restaurants it is very important that the local restaurants should increase their interaction of the brand towards the customers while building a positive image about the brand in customers mind. Also it is determined that if the local restaurant create trust worthy customers and loyal customer the decision to purchase the product will gradually increase even though there are many local restaurants selling the similar products.

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Critically investigate the challenges of integrating emerging digital technologies within organization under the theme impact of digitalization on business activities

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Abstract

The research was conceptualized to critically investigate the challenges of integrating emerging technologies within organization KF under the theme impact of digitalization on business activities will rally round to assess the challenges encountered through implementation of technology.

The engrossed objectives were to explore the upcoming technology practiced, discover the impacts business congregated during alteration process, assess challenges during the process and authenticate the effect.

Study seeks to help bank sectors be conscious better prepared to accept the emerging digital technology and take-up challenges with confident in unbendable competitions. Through study it is understandable about authentic influence through technology, the ultimate impacts and most challenging stages on which much consideration has to be made. It is vital to understand about challenges emerging to avoid negativities.

As pragmatist researcher it was able to carry a freedom research which escorted to acquire multiple collections of data. Through the use of inductive approach new theory was formulated from analyzed data. Mixed method was utilized to congregate qualitative and quantitative data. Survey method applied as the research strategy in order to collect in-depth information's descriptively. The research employed cross sectional studies as the time horizon. Finally the adopted data collection tools & techniques were interview, questionnaire and observation methods.

The study inveterate the presentence of positive connection between digital technology utilization and organizational process with challenges emerge from digitalization.

Research wrap up demonstrating that looking-up technological significant challenges business encounter consciously offer stability and has positive impact where people screening with an activist perspective.

Introduction

Technologically accepted globe is dynamic and increasingly changing presently. Today's business atmosphere responds to digital technology and emerges into it which enables businesses to survive operating. Companies must take actions to place in digital technology in order to be sustainable and stay away from fatalities. Through the introduction of effectual digital technology, it helps a business to stay competitive and appropriate to the ongoing market. Connectivity is helping to move the product and service to the customer which build-up relationship and make customers retain by satisfying the needful they require.

Businesses must be technologically conscious and comprehend how alterations in the instant environment are recounting in order to be thriving.

As an end result of digital technological transformations cost is gradually dropping down and revenue is rising up. A compound and forceful contemporary world is anticipated difficult to predict and the intrinsic uncertainties can formulate it highly changeable and potentially hectic.

Recently the rapidity of technological development started to increase speed of force on organizations to undertake digital change ever since the competitors are continuously becoming accustomed to new technology, which has authorized customers to stipulate, for example, better and faster service anytime, anywhere and with any device (Fitzgerald et al. 2013).

The research project is conducted with a focus to discover the challenges of integrating emerging digital technology within an organization. Digital transformation influences the competitive state. The transformation means new business opportunities by exploiting innovative business reproduction.

Aim of the research
To critically conduct research and investigate the challenges of integrating emerging technologies within organization "Kanrich Finance-Kandy".
Methodology used

1. Adopted philosophy
Pragmatism research philosophy is employed to address the research study.
Research proves quality view with a combination of positivism and interpretivism. Through a multiple vision it's possible to acquire quality and quantitative data. As the pragmatist researcher it is able to carry a freedom research which leads to acquire multiple collections of data.

2. Adopted approach
The research uses inductive approach for carrying out the process.
Building a theory requires qualitative data with utilization of various methods in gathering data with a multiple view on phenomena. This approach is highly beneficial because it is a well structured and flexible in making adjustments when needed to output a quality result and no need arise to depend on to a particular fixed theory. New theory is formulated from analyzed data rather than relying on previously formulated theory by other authors.

3. Adopted methodical choice
The research utilizes mixed method to congregate qualitative and quantitative data.
This method is a blend of both qualitative and quantitative research methods. Through qualitative research, examination of organization and through quantitative research, explanation of investigation is performed. Through the use of quantitative method it portrays certain causes such as sampling size, collection of data, sampling techniques and procedures, data analysis plan the processes of the research project. Qualitative research is utilized to analyze survey, interview and observation. Quality of the research is identified based on the way of interviewing.

4. Adopted strategies / methodologies

This study applies survey research study.

This is an ordinary strategy for business and management research. Survey strategy is utilized for data collection in a structured mode from a considerable number of employees of the sample. Descriptive research involves gathering data that describe and then systematize, tabularize, represent and explain the data collection. There is no cost accrued also builds trust as it is being conducted with visual proofs and observable facts. The processes are followed in order and done on time.

5. Adopted time horizon

The research employ cross sectional studies as the time horizon for the research to be carried-out. Data is gathered at a specific period of particular phenomena.

6. Adopted data collection tools & techniques

Interview, questionnaire and observation methods are utilized. Under probability sampling simple random and under non-probability sampling purposive and convenience sampling techniques are employed for the study.

Interviewing was done according to the semi-structured method because order can be modified according to the answer pattern of interviewer to make the comfort ability for participants, interviewing was done with the company manager and assistant manager. Through face to face interview method it is possible to make the participants comfortable by capturing their non-verbal cues and understanding the verbal responses.

The research carries out with the use of primary data which are collected using questionnaire distribution to respondent sample for the operational level employees. Convenience sampling utilized to distribute questionnaire by selecting the convenient operational level employees. Purposive sample method used for interviewing the higher level manager.

Observation plays the supportive role method which helps in making the research valid.

Conclusion

The research focused on challenges integrated by the organization in response to digital technology. It has been found that the company utilized technology to move the business to the next level and position well in the market. Digital technology use has significant challenges business encounters.

Digital technology effects various departments which are directed at developing the effectiveness of operations within departments such as IT, R&D, Operations, Marketing and HR. The company invests to enhance digital capabilities to improve outcomes for customers, employees and stakeholders. Organization invested more in technological advancement to strengthen systems and processes.

The research study wrap up stating that information technology has brought a positive impact internally and externally. The internal and external people are viewing with an activist perspective. Technology has made an impact on brand, position and continuity. Internal accepting and performances by employees is a chief importance

to the achievement for the rest of processes to continue with a flow, though they are not satisfied so technological facts has to be inserted in HR department and offer with satisfactory benefits where customer satisfaction is a crucial fact.

Digital technology inserting has helped the company with various benefits in reducing the level of negative practices, fair treatment, more productivity with less time consumption, generated vast level of stakeholders, easy to commence on. The company rolled out certain initiatives to enhance the company's infrastructure to increase the velocity of transactions, stability, activities and operations. Advantages gained through offering customers with quality and efficient services but certain strategies has to be implemented for customer locking with marketing thinking to increase the level of income.

The study inveterate the presentence of positive connection between digital technology utilization and organizational process with challenges emerge from tech, in order to face challenges confidently as a fighter the company has to engage in making various alterations.

Recommendation

I.   The company can take attempt to create product diversification with innovation.

II. Organization can take effort to introduce virtual application which will result in generating customers with trust. Virtual application offers several benefits to customers so through this certain strategies can also be implemented.

III. According to the current situation the focal point has to be turned on to purchase in needed resources for IT department to result for the company growth.

IV. The focus on to human resources, the chief fact of the organization. Human resources has to be considered much so well technological systems and HR development programs containing extrinsic as well intrinsic benefits to enhance the quality of performance and motivation. Steps must be taken to insert digital technology in to HR department.

V.   The company can insert systems such as Enterprise Systems to organize properly and run the operations and Customer Relationship Management System to manage and deal with all customers which helps to track and monitor customers, this can also be called as a strategy to generate customers.

VI. To get customer convenience mobile banking solutions and other systems has to be implemented.

VII. Marketing has to be developed and applied to plans technologically.

Globalization in small and medium enterprises

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Abstract

Globalization is a vast concept which has a deep influence over the corporate world. It can be said that "Globalization" has created a dawn of new era for the businesses. This report explains this topic by discussing the impact of globalization with a comparison on three different enterprises of three different growth levels. They are namely, Andora (A successful enterprise), Feathers (A thriving enterprise), RNS (A failed enterprise) which comes under the Small and Medium Enterprises.

The main aim of this report is to compare and contrast the benefits and key challenges of globalization faced by the enterprises and showing how each company can do to improve their globalization process while improving their growth.

The importance of doing this project report is to understand how to properly manage a successful business project and to learn about the concept of globalization and how it influences the small and medium enterprises. The research strategies used for this report are surveys and case studies. Mixed research methodology used for qualitatively and quantitatively. The data collection tools used were interviews, questionnaires and documents.

The data analysis done through comparison of the selected three enterprises which eases the understanding of the content of this report for the reader. The critically done data analysis reveals that Andora and Feathers utilize the benefits of globalization, whereas RNS was not aware of these benefits. Finally, the value gained from conducting the project management plan and executing it through this research shows its usefulness to support sustainable organizational performance of the selected three organizations.

Author Keywords
Globalization, Small and medium enterprises, Project planning, Project report

Introduction
This paper is based on the concept of "Globalization" which discusses the process of globalization, benefits and challenges that take place due to globalization within a small and medium enterprise. Globalization is a process by which businesses develop international influence or start operating on an international scale. This acts as a huge platform for small and medium businesses to penetrate the target market and position themselves, in order to have a global reach. The project conducted explains this concept by discussing the impact of globalization with a comparison on three different enterprises of three different growth levels. The selected three organizations are, Andora (a successful enterprise), Feathers (a thriving enterprise), RNS (a failed enterprise).

Globalization has its roots on all the functioning businesses around the world. It orchestrates the spread and flow of business operations in a global scale. This is one of

the main way where the business communicates with the global audience.

The effect of globalization on small and medium enterprises (SMEs) has received a lot of attention in international circles in the past few years. One of the reasons for the international focus on SMEs is that these firms make significant contributions to the economy of both developing and developed countries. Changes in globalization has made a huge impact on the businesses and the society. Small and medium scale enterprises are expected to facilitate the growth and development of human and capital resources towards general economic development and the rural sector in particular. And globalization is the spread of economic innovation around the world and the political and cultural adjustments that accompanies this diffusion.

Aim of the Research
The main aim of this research is to compare and contrast the key challenges faced due to globalization by the three selected enterprises. In order to do this, objectives were set to assess the process of Globalization on three different types of Organizations, to understand how far has globalization helped each of the Organization to improve business, to identify the key challenges faced by the three Organizations due to the utilization of Globalization.

Research Process
This was carried out as a preliminary research which was conducted in 3 stages namely, planning, execution and closeout. Planning of the project is the part where the Organizations were picked and the relevant aims and objectives were developed. Another crucial part of planning is drafting the project plan. After coming up with the aims and objectives of the selected organizations a relevant draft is prepared on estimation of facts with the aid of Work breakdown structure, Gantt chart and Milestone schedule.
After this the interview questions were prepared. Then the project proposal and the approval were obtained. During this process the interview appointments were also taken. Next step was the execution of the plan. During this step, a Background study and research on the subject were to be conducted. Then the relevant qualitative and quantitative data were to be obtained from the interview of the relevant Organizations on the previously acquired appointment dates. Then all the collected and researched data were to be pooled together and analyzed. This process filters the qualitative data from the collected data. After this a qualitative report is to be written to produce a meaningful project.

As the closeout, after several reviews and updates of the project was considered to be perfected. This is a rough sketch of how the research was planned and carried out.
The research methodology that was used for this project was "Mixed methodology". Because for this project to be a success it was crucial to analyze the qualitative and quantitative data critically. The research strategies used to conduct the above research are, surveys to gather data during the interviews and case study used during background study and research. The data collection tools used during this process were interviews, questionnaires and documents such as annual reports.

The sampling method that was selected for the project are both probability and non-probability sampling methods. Because it involves studying of 3 selected small and

medium enterprises which will reflect their behavior against globalization. Probability sampling was selected because the samples represent a group of population it is easier to obtain the required information. This method provides information with less errors and non-probability sampling because this method targets certain members of the enterprise to get specific details about the enterprise.

The total number of samples that are selected are 12. This includes both probability and non-probability sampling. 7 Probability samples are taken using random samples which were handpicked. 1 supervisor, 1 operational employee and 1 low level employee were selected from Andora and Feathers and 1 low level employee was selected from RNS. They were all hand picked randomly according to probability sampling. 5 samples are taken using purposive and convenience sample to obtain non-probability sample. The owners of the three enterprises were selected using purposive sampling. And 2 Assistant managers were selected, that is 1 from Andora and 1 from Feathers enterprise using convenience sampling.

Conclusion and Recommendation
Overall synopsis of the research was arrived separately for all 3 organizations that were mentioned above. For Andora, it was found that it has adopted to the technological changes more in operations while the human resource is minimal, majority of the revenue of Andora is gained from ladies' apparels and shoes and the marketing of Andorra is mainly done through the website and social media.

For Feathers, it was found that it is only exporting the products to UK, majority of the income is gained through exporting sweaters and they use manual processes more than using the digital technology.

For RNS, it was found that it was not aware of the benefits of Globalization, it has only exported through the central province of Sri Lanka, the main reason for its failure is due to poor management and it has not used the digital technology for the betterment of the company.

And conduction of this project showed proof that project planning is crucial for a successful project.

Based on the outcome of the research objectives and conclusion; recommendation was provided to improve the process.

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Impact of globalization on small and medium enterprises

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Abstract

This report critically evaluates how globalization has impacted on small and medium scale enterprises in Kandy district. The concept of globalization is defined as the process of interaction and integration among people, companies, and governments worldwide. The research was done upon Amaya Resorts. The researcher describes that medium scale businesses has been experiencing both positive and negative impacts throughout the process of globalization.

This project would be useful to the management level employees in research and development department of the selected organization. The research report will provide an analytic evaluation of how effectively the company has approached globalization to the given stakeholders.

The objectives of the research were to access the process of globalization, while analyzing the impact of globalization towards Amaya Leisure PLC, discovering the benefits and challenges faced by the organization during the process of globalization and to provide appropriate suggestions and recommendations to utilize the benefits of globalization productively to achieve the organizational goal effectively and more efficiently.

The findings and suggested recommendations of this research would not only benefit Amaya Leisure PLC but the entire hotel industry, especially medium scale enterprises. This research project would help to outline the effectiveness of globalization towards the organization to improve its business operations further.

Through the research, it was evident that the impact of globalization on medium scale enterprises have benefited through making the organization more convenience to establish their business around the world. The researcher has justified that the organization experience greater advantages of globalization rather than its negative effects.

Author Keywords
Globalization, Hotel industry, benefits and drawbacks, Technology.

Introduction

Globalization is the process of interaction and integration among people, companies, and governments worldwide. Due to the advancement in technology and transportation, world has become a global village. Globalization have made a great impact on the world economy. Through globalization, multinational companies cooperate with a country, they also bring their religion, culture, and life style, where the people in the poor country increase their standard of living and get acquainted with new civilization. Even, globalization creates an aggressive competition in industry. For the progression of industrialization, less developing countries cooperate with more developing countries to

get new technology or instruct employees to know some modern methods. With these advantages, governments have a basic background to build their country and escape from the Third World. On the other hand, globalization has become a great threat to the world population, where the globalization has been linked to rising inequalities in income and wealth.

Aim of the research
The aim of this research project is to identify impact of globalization with its benefits and drawbacks for the hospitality industry in Kandy district, Sri Lanka.

Methodology
The chosen research methodology is mixed method with a descriptive survey. The data collection tools used in the research are Interviews and questionnaires. Sample was selected on a probability base. Data is collected from four managerial level employees from the organization and analyzed using qualitative method.

Amaya Resorts has been selected as the sample for the research, since the chosen organization falls under hospitality industry. The main objectives of carrying out this research is to, access the process of globalization in the organization, discover the benefits and problems faced through globalization and to provide proper suggestions on how the organization could approach the process of globalization more effective and efficient in order to be a successful firm.

Findings
The research comprehends that process of globalization has supported the company in diversifying the business in the global context. The process of globalization has facilitated the organization to market its business in digitalized platforms worldwide. Moreover the technological factor of globalization have largely influenced the organization. Thus the production cost per unit has been reduced with the revolution of technology. The researcher believes that Amaya has been actively cooperating with current global trends in the market. Marketing, finance and operation department has been greatly influenced through the effect of globalization. There is a positive effect of globalization on workforce in hotel industry, where due to increase in business after adopting the process of globalization, made Amaya to increase the number of employees, providing job opportunities in the country.

Through the effect of globalization Amaya has declined barriers to international hotel industry, leading to diversify business globally. Revenue of the company have significantly increased after adopting the process of the globalization, through the development of technology and transportation. Digital marketing has played a major role in the organization creating a wider range of customer base.

Although process of globalization provides benefits to the organization, there are few negative impacts of globalization to the firm. Globalization made international trade easier through reduced trade agreements, while competition in the market have increased. Implementation and maintenance of technological advancement has resulted in incurring high costs for the organization. And these investments has not always resulted in increasing returns. Furthermore globalization has also impacted the global

environment in a negative manner.

Conclusion and recommendation.
The process of globalization has made a great impact on the small and medium enterprises with both positive and negative factors. It could be concluded that the technological factors of globalization has played a major role in marketing, finance and operations departments of the firm.

The process of globalization has resulted in increasing expenses in particular departments and it has also resulted in reducing costs in some other departments. Overall impact of globalization has supported the organization to diversify its business both locally and internationally. Though the process of globalization has impacted the firm in both positive and negative manner, it could be justified that the organization experience greater advantages of globalization rather than its negative effects.

Thus it can be recommended that the firm should be more aware and forecast the returns when investing on latest technologies. Since the firm experience high competition in the market, globalization has also assisted to move to blue ocean management strategy, under the strategy, the firm could move to green markets where they could operate their business with reduced competition, while increasing the revenue.

The organization could also put effort on being socially responsible with reduced environmental pollution, which would be a positive factor for organization. This could help to promote the organization easier, while attracting much more customers towards the business and to build up a great brand image.

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Impact of globalization on small and medium enterprises

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Abstract

This report critically evaluates how globalization has impacted on small and medium scale enterprises in Kandy district. The concept of globalization is defined as the growth of the interdependence of the world's economies, cultures and businesses. The research was done upon Abans PLC. The author describes that medium scale businesses has been experiencing both positive and negative impacts through the process of globalization.

This project would be useful to the management level employees in research and development department of the selected organization. The research report will provide an analytic evaluation of how effectively the company has approached globalization to the given stakeholders.

It was analyzed that the key benefit is globalization has supported the organization to diversify the business globally. It was identified that the development of technology has resulted in creating both the core benefit and drawback, respectively global diversification and uneconomical expenses incurred on technological updates. The researcher has concluded that the overall positive impacts are greater than the negative impacts experienced by the company.

Author Keywords

Globalization, benefits and drawbacks, Technology.

Introduction

Globalization could be known as the growth of the interdependence of the world's economies, cultures and business. There are several types of globalization. Such as, financial globalization, economic globalization, technological globalization, political globalization etc. The process of globalization has resulted in cross country trade, where goods, services, technology, investments, people and information are exchanged between two or more countries. Globalization enables people to consume goods and services which is not available in their motherland. The process of globalization has impacted the business in both positive and negative manner. The rapid development of the technology is known as the main driver of globalization.

Aim of the research

Aim of the research is to identify how globalization has made an impact on small and medium scale enterprises in Kandy district.

Methodology

The chosen research methodology is mixed method with a descriptive survey. Interviews and questionnaires has been used as the data colleting tools. The collected data has been analyzed using qualitative method. Sample was selected on a probability base.

Five managerial level employees were selected for questionnaire and interview were used for data collection.

The researcher has chosen Abans PLC as the sample to complete the thesis. The selected organization falls under electronical sector. The main objectives of carrying out this research is to, recognize the benefits and drawbacks experienced through globalization and to provide recommendations on how the firm could approach the process of globalization more productively in order to make the business much more successful.

Findings

The research comprehends that process of globalization has supported the company in diversifying the business in the global context. The process of globalization has enable the firm to market its products in digitalized platforms. Moreover the usage of human resource has reduced and the usage of the machineries and equipment has increased. Thus the production cost per unit has been reduced with the revolution of technology. The researcher believes that Abans PLC has been actively cooperating with ongoing trends in the global market. Changes in marketing practices of the company clarifies that the company had being restructuring conventional practices based on ongoing trends. Marketing and sales department has being facing to a considerable transformation. Generally the management level employees has a positive take on adjusting work patterns and upgrading latest technological practices as it has enabled the company to maximize the efficiency level.

Relaxation of import and export policies has enabled the company to diversify the business in global a perspective. Easing policies on importing electronical devices has increased competition for the firm. The revenue of the company has increased over the past two years which is backed by the growth of sales volume generated from e-commerce platforms. With introducing digitalized marketing platform the organization has been able to reach a wider range of customer base. So that the demand for the product has been increasing while experiencing a reduction in the cost of production. Online business practices has been the major source of generating innovative business opportunities to the company.

Despite of the above mentioned advantages the firm has also been experiencing following disadvantages. The technological updates has resulted in incurring high costs for the organization. But these updates has not always resulted in increasing returns. The investments on IT systems are considered to have a long payback period which can also result in creating a cash flow insolvency for the firm. Furthermore globalization has resulted in increasing the usage of the machines which emit harmful gases and the usage of plastic and non-disposable goods. Thus globalization has impacted the global environment in a negative manner.

Conclusion and recommendation

In concluding the process of globalization has made a considerable impact to the small and medium enterprises in both positive and negative manner. It could be concluded that the development of technology has played a vital role in marketing and operations departments.

The process pf globalization has resulted in increasing expenses in particular departments and it has also resulted in reducing costs in some other departments. Overall impact of globalization has supported the organization to diversify its business both locally and internationally. Though globalization has generated both positive and negative impacts, the researcher has concluded that the positive overweighs the negative impacts.

Accordingly it can be recommended to be more vigilant when investing on latest technologies. Moreover if the company could identify the exact needs of its customer base prior introducing new products it will reduce the possibility of experiencing product failures. The researcher opines it would generate a competitive advantage if the firm improves the quality of the service provided in e-commerce platforms.

The organization should furthermore focus on producing ecofriendly products. Which would benefit the company with two different ways. For instance, the organization would be able to improve its brand image as currently the environment pollution has become a major concern. Also it would help the organization to attract new customers for ecofriendly products.

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Organizational Cultures and Workforce Motivation

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Abstract

This paper is focused on organizational cultures and workforce motivation for better employee performance. Organizational culture and workforce motivation are crucial in developing effective performances within the workplace. Culture, politics, power and motivation drives the work environment within an organization. The organization that has been selected to discuss this topic is Emjay Penguin Garments (PVT) Ltd.

The main objectives of this case study report was to analyze the influence of culture, politics and power on the behaviour of employees in an organizational context and to evaluate how to motivate individuals and teams to achieve goals. The importance of carrying out this case study report is to understand how an organization functions due to the influence of culture, politics, power and motivation and to give some suggestions to fill the observed gaps.

The main research strategy used for this report is a case study. The research methodology used is mixed methodology to increase the quality of the content by analyzing both qualitative and quantitative data. Observations, documents are the main data collection tools that are utilized to obtain effective data.

The data analysis was done through using concepts of culture, power, politics like Edgar Schein's organizational culture model, Hofstede's cultural dimensions and metaphors of organizational politics. Content and Process theories of motivation and techniques were used in an organizational context. During this process some valid external opinions were taken in to consideration through a forum discussion.

This study shows that culture and motivation enhances employee performance, leading to business success and is evidenced by the research.

Author Keywords
Organizational culture, Power, Politics, Motivation

Introduction
The purpose of this research was to study and understand about organizational cultures and workforce motivation. The organizational culture is the soul of how the workforce is motivated to navigate. A good and healthy organizational culture will push the employees to work towards success of the organization. While on the other hand, a negative organizational culture will have the exact opposite impact on the employees. Culture is simply an ecosystem where the elements of culture are embedded and interact and work together in order to support each other towards achieving a common goal. Workforce is one of such element and motivation is the driving force that help them to achieve the goal.

Organizational culture includes an organization's expectations, experiences, philosophy,

as well as the values that guide member behavior, and is expressed in member self-image, inner workings, interactions with the outside world, and future expectations. The 4 main types of organizational culture such as power culture, role culture, task culture, person/ support culture are given importance in order to explore the selected subject furthermore.

It is the fact that organization's ideas and strategic concept will fail down in a short time period when people are not getting agree with the organization's strategy and key objectives. Each individual have different kinds of triggers to get motivated, so it's a quite complex task to motivate each and every individual in an organization. People's personality always matters during the identification of different motivational needs. The people's needs changes according to the dynamic changes in their life stages. Therefore, it is important to understand the distance or deviation between motivational training and demotivation training and a short lesson to implement practical learning events in order to achieve success.

Motives are the expressed needs and could be conscious or subconscious. They are always directed towards goals. Motivation is an inspirational process which compels the members of the team to pull their weight effectively to give their loyalty to the group, to carry out the tasks properly that they have accepted, and generally to play an effective part in the job that the group has undertaken. Workforce motivation is essential for greater efficiency, to reduction in absenteeism and labour turnover, to create team spirit, to reduce wastages and breakages, to strengthen professional relations, to promote innovation, to encourage optimum use of resources and to build a good corporate image. Motivated employees are more loyal to the organization. They work with a sense of commitment and dedication. This improves the overall performance of the employee, which enables better results for the company.

So, it is clear that developing and maintaining a healthy and engaging corporate culture requires purpose, intention, attention, and identity. Fostering an engaging company culture is an important business strategy that can shape employee motivation and improve a business's performance in critical areas.

Aim of the Research
The aim of this research is to critically analyze the influence of culture, politics and power on the behavior of others in an organizational context. The organization selected for this purpose was Emjay Penguin Garments (PVT) Ltd and to evaluate on how to motivate individuals and teams to achieve goals and also to critically evaluates the relationship between culture, politics, power and motivation that enables teams and organizations to succeed.

Research process
The research methodology used for this research was the "Mixed research methodology". This allowed to gather qualitative and quantitative survey in order to gain a strong perception of the subject. The main research strategy used for this report is a case study. The data collection tools such as documents and observations were used in order to conduct a deep critical analysis on the subject and to increase the validity of the report. The sampling method used for this case study report was non-probability sampling.

This method targets certain members of the organization to get specific details about the organization. The category of the people that were selected to obtain these details were hand-picked and were designated to an authoritative position in the organization. Around 3 members were picked for questioning, some of such selected people were the HR manager and operations manager of the organization.

The main focus of the case study report is to study and understand the areas such as culture, power, politics and motivation that are present in an organization. For this purpose, many concepts and theories were used in context of the organization, "Emjay Penguin Garments (PVT) Ltd." like Edgar Schein's organizational culture model, Hofstede's cultural dimensions were used to explain and understand the culture within the organization. Power, was studied in a point of view where when the power is considered as a property of relationships within an organization. And based on this the developed 5 categories such as legitimate power, reward power, coercive power, expert power and referent power were explored. Politics was studied based on the 4 metaphors of organizational politics. Namely, the weeds, the rocks, the high ground and the woods. Motivation was studied by carrying put research and understanding the types of motivational theories such as content theory and process theory. Maslow's hierarchy of needs, Fredrick Herzberg's two factor theory and Alderfer's ERG theory were the content theories that were used and Vroom Expectancy motivation theory is the process theory that was used in order to explore this subject even more. Also, to understand how motivating techniques helps in goal achievement in an organization. During this process some valid external opinions were taken in to consideration through a forum discussion.

Conclusion and Recommendation
Overall synopsis of the research was arrived as, that the culture, politics and power influences the behavior of others in both positive and negative way. And a comforting surrounding and workplace has actually acted as a motivating factor for the employees to perform well. Also, it was understood that motivation is a key factor in achieving a better performance. And a strong relationship between culture, politics, power and motivation will enable teams and organizations to succeed.

Based on the outcome of the research objectives and conclusion; recommendation was provided to improve the process.

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Scrutinize the influence organizational culture and motivation has upon behaviors and performance within the workplace

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Abstract

The purpose of research experiment was to scrutinize the influence organizational culture and motivation has upon behaviors and performance within the workplace Smart Shirts.

The internal components culture added-up with motivation has influence on organizational behavior and worker performance. Specifically the study aimed to evaluate applying of certain theories to authenticate the influence.

Functional, product-based and matrix organizational structures were used based on the organizational objectives to determine the flow of information. Organizational culture model was applied and the theoretical model was adapted for the research to diagnose culture at organization where it was discovered certain culture practiced. It was analyzed that Hofstede's cultural dimension was evident. Communication network flow plays the vital role in employee motivation and for the accurate flow of information. Legitimate, coercive and reward power were applied and final evaluation was the motivational theories where it was found that Maslow Hierarchy of Needs and Locke's Goal Setting theories were applied for the motivation.

The research analysis reveals that if two aspects motivation and culture are not managed show affect on performance and behavior. Motivation shows the way to bring quality performance. The two aspects are the ways through which human resources need to be moved in for performing the roles and duties for better output. The results verified the importance of two aspects on performance and behavior of employees. These results also exemplify how culture and motivation convince performance and behavior while offering a positive boost-up and make employees prepared for work and engage themselves wholly.

Aim of the research

The aim of research experiment was to scrutinize the influence organizational culture and motivation has upon behaviors and performance within the workplace and also focused to evaluate applying of certain theories to authenticate the influence.

Methodology

Organizational cultural model applied to organization

Artifacts: Through certain elements followed in the organization it is discovered that the company's culture is up to a standard level so the culture is strong.

Espoused Values: The set of values are team spirit, quality, passion, and determination

as well standardization.

Assumptions: In the selected organization there are no controls on females by males or any harassment made. It is assumed to give equal status to both genders.

The types of cultures employed at the organization

Power culture dimension
The power source waves have influence all the way through the whole organization.
Example: The general manager or CEO in the organization has a high power that controls everyone in the entire organization who takes decisions with his own.

Role culture dimension
This culture turns the focal point on job description and specialization where as the task of work is controlled by rules and procedural actions.
Example: When a project team is build, the each person in the team are given with specific roles according to the capability they acquire or as the company is a garment it may have various lines for each task so the employees who are specialized and has the capability to the particular role can be assigned.

Task culture dimension
This culture directs individuals to a one purpose. Team produces positive rays through the efforts rather than individual work so the individual performance in overshadowed.
Example: When a smart goal is set, the workers focus on to the one direction and are in intention of achieving the set goal. The business believes in team working because it consists of multiple talents which lead to a great success.

Person or Support culture dimension
This is represented as a cluster with no individual's control. Power is given based on the task capability and power sharing as well power is exercised according to the need of expert or task capability.

Example: Quality assurance team and IE team are with person culture, they believe in their expertise and also acquire specialized capability so the organization is benefited and has less power in controlling them because they are crucial to the business.

Hofstede's cultural dimension is evident in the organization where as the presence of high power distance is only suitable so that there will be no effect to the strategic decisions and the end result will be a definite and positive output. The tasks are given for individuals where the company believes in the individual work so if the work is given for individuals lead to a standard output through the individual effort with own strategic approaches. There also presence collectivism when it comes to particular task need. Both male and female are given equal treatment. The uncertainty avoidance is low in the business where the employees are in safe line. In the presence of short term orientation there is personal control, respect, tradition. The employees are much concerning about the periodic accomplishments. In the organization no restraint is observed.

The communication directions employed at the organization are "The Chain" network

structure, downward flow, upward flow and also interdepartmental communications.

The organizational powers employed at the organization are legitimate power in the organization a person who is a one common manager who acquires a strong power and has control over the workers. This person has all the rights to take decisions on any department who is expertise and with much experience when in coercive power strict goals are set for the employees and if they don't accomplish it on time then there will be reduction in other benefits. This power is acquired to the each departmental heads or products based managers and finally reward power which is used as a motivational factor for the positive accomplishment in work. The workers are rewarded according to the performance they make and the performance is measured in equal manner to all people.

It is found that Maslow's Hierarchy of Needs theory has impact on culture and employee performance and also Locke's Goal Setting Theory is slightly applied in the organization.

Conclusion
Organizational culture added up with organizational motivation leads to better performance or productivity.

The motivation show the way to high level of inventiveness and creativity from the employee and where monitoring be complicated, motivation is therefore enormously vital in support of making sure far above the ground quality performance. Encompassing a high level of motivation is consequently in itself valuable for employees and a reduction in motivation may affect employee's performance. Productivity measures the units of output when an employee does a duty.

Through the research study carried out it investigated the influence of organizational culture and motivational theories have up on to better worker performance and behaviors in the workplace. It is observed that the two aspects organizational culture and motivation has impact on employee performance as well behaviors and has recognized various internal aspects of firm with the place where enhancements has to be made for the organization.

The study reveals if the motivation and culture are not managed properly have affect in performance and behavior, so the firm must concern on goals, objectives of employees. The firm must focus on proper stability and management of internal two aspects as well is in conscious about the issues and makes adjustments before it results negatively. Business has to lessen the complications on culture and motivation in order to build efficient, participative for enhancing worker engagement. Two aspects are the ways through which human resources of the business organization needed to be moved in performing the roles and duties for better output. The end result verified the importance of two aspects with steadiness, reliability, compactness as well wholeness on performance and behavior of employees in organization.

Recommendation

- Connect or link organizational culture to HRM practices.
- Make sure that organizational culture intend to develop employees' performance.
- Implement technological systems.
- With Maslow's hierarchy of needs, another theory can be added or replaced (Vroom's expectancy theory).
- Make Locke's Goal Setting Theory as one of the main theory to be applied in the organization

Effects of digital technology in business activity: The impact of digital technology in supporting small business growth and innovation

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Abstract

Digital technology has very real impact in most of industries and in all aspects of the economy, while businesses and enterprises continue to undergo considerable changes. Usage of these technologies is revolutionizing the rules of business, resulting in structural transformation of enterprises. Modern businesses are not possible without the help of digital technology, which is having a significant impact on the operations of Small and Medium Sized Enterprises (SME) and it is claimed to be essential for the survival and growth of economies in general. Also implementation of digital technology has led to innovative tools and operating models of business activity which has a significant effect on geography and size of prospective market, competitive environment and speed of goods substitution and implementation of ICT (Information and Communication Technology) applications in cooperative management practices are essential for 'entry ticket' to participating in the global market. This leads to unlimited opportunities to restructure their plan for update information, reduction of duplication work and reduction in reliable upon human information storage.

Development of SME and the role that SME sector can play in promoting economic and social development by creating opportunities for employment. This paper examines the impact of digital technology in a medium scale industry, a branch of Kotmale dairy (pvt) Ltd. situated in Hatton and to know the value of digital technology and the role it plays in the contemporary world in order to contribute to the small business growth and innovation.

Author Keywords

Digital Technology, Small and Medium Sized Enterprises (SME), ICT, Economy, Entry ticket

Introduction

New technologies had a great impact on all aspects of life and the global society and economy is undergoing a fundamental transformation. Society is changing and is becoming "knowledge society" more dependent on new technologies, with a new economy or "knowledge economy". In the information society environment successful enterprises produce high technology goods and services and transform human effort materials and other economic resources into products and services that meet customers need. In such a society, in order to be successful, SME would need high quality information and must always provide superior value, better than competitors, when it comes to quality, price and services [Pollard, 2006].

Digital technology which has led to so many new innovations like new hi-tech

machineries, introduction of robotics in all possible fields, energy systems (solar, nuclear etc.), Internet, ICT, etc. These innovations have a vast impact on SME, especially infra-structure of Industries, employment rate, energy usage, productivity, labor cost, workload and waste management. Compared with traditional business new technologies facilitate an increased interactivity, flexibility, business transactions as well as improve interconnection with business stakeholders.

This paper observed the impact of new technologies in SME. The focus is on exploring the opportunities that new technologies present to SME. While, the purpose of the paper was to show the status of a Medium scale industry, a branch of Kotmale Dairy Product (Pvt) Ltd. in Hatton, with regard to usage of digital technology for competitive advantages in both local and international markets. Also, to know the value of digital technology and the role it plays in the contemporary world in order to contribute to the small business growth and innovation.

Methodology

Subsidiary of Kotmale Dairy Product (Pvt) Ltd. Company situated in Hatton was selected initially, and a small preliminary research on the relevant topic on how digital technology impacts the small scale business activities was done. Mixed method of quantitative and qualitative information was approached through-out the research. Major data collecting methods used in this research are Survey and Interview.

Survey was designed according to the aim of the research as a quantitative approach and it was conducted by selecting a sample size consisting all the working members in the industry. Qualitative approach was by conducting an interview with the manager. Interview was conducted in a structured manner for about 30min and it was written down properly

Results and Discussion

Accordingly, usage of digital technological has a significant impact in their infra-structure. In traditional dairy industries there is a need for large spatial area, but due to the inventions new machineries the spatial area for the industry has been decreases widely so a small area is enough for high production. Considering, the productivity it has been increased, while the production cost has been decreased, especially the labor cost because most of the works are done by the machines. It has increased the quality and quantity of products, which has been a major issue during the past years in Dairy companies. Also, it has led to new innovations of dairy products like Drinking Yogurt and Kotmale Lite Low-fat drinking yoghurt with flavors. ICT and internet also have a vast impact on this particular Industry, especially when it comes to Recruitment social media platforms have opened up a way to contact the employers (LinkedIn, Facebook etc. and also it welcomes the review of their products, so that the company can improve their quality of the products. Also, it has an impact on sales, through online stores. Usage of hi-tech machineries has vastly reduced the amount of wastes produced, so the cost for maintaining and degrading the waste has been reduced. Implementation of technology has made their work and production activities easier.

Conclusion

It is encouraging the development of SME sector as a way to diversify the economy.

But, despite the improvement of digital technology in SME's and is perceived as critical in creating employment and job opportunities, they lag behind their counterparts such as the lack of experts in operating the machines and digital illiteracy. But without using digital technology, SME will have serious and fatal consequences in the future and will imply the risk of lagging behind economically.

So it would be better if large industries can implement digital technology in their small subsidiaries too. Also, recruit super advanced people who can be able to cope with the present technological advances that is very necessary for productivity and to compete with other companies.

The government should be involved in providing environment to support and help SME's to better use digital technology and increase the countries competitiveness, productivity and growth through investment in information technology, e-business and new business models.

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To Discover How E-commerce Drives Business Success

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Abstract

This report examines how E-commerce drives business success in Brookside Hotel Wattegama. Technology is a huge contributor to the well-being of human kind.

To begin the project, a frame work of the research was designed using Saunders research model; developing objectives, research methods and implemented the process. Data collected was analyzed for results.

Identified how Ecommerce drives business success in Brookside by collecting data from sources like employees, websites, internet, journals, and books. This survey was carried out using the mixed research methodology with a sample of 25 employees.

In general today's business always strive to create the next best thing that consumers want because consumers continue to desire quality products and services faster and cheaper and Brookside Hotel has taken this opportunity to increase business and customer satisfaction. The internet is commonly used by Brookside Hotel for communication, reservation and marketing purposes. The confidence of using booking Websites and Email for communication and reservations with both suppliers and customers increased and more business relationship developed to meet the demands.

Brookside has more positive impact on the adoption of Ecommerce such as competitive advantage, save time, lower cost, growth of communication, easy way to gain customers, affordable employees, better quality etc.

However, more awareness should be undertaken to enlighten all the employees in the Brookside Hotel about the potential of Ecommerce, also they need to come up with training and development programs and motivate their existing employees.

Research reveals that E commerce has been important for Brookside Hotel success.

Introduction

Hotel and tourism has been one of the fastest growing industries in the world. The hotel and tourism industry has been influenced by information and communication technologies (ICT). Nowadays internet seems to have had the strongest impact on the tourism and hotel sector. ICT and internet usage research is respect of the hotel industry has been conducted from hotel perspectives and the customer perspectives. The hotel industry has been fairly proactive regarding the adoption of new technologies. Recent advances in telecommunications, networking data base, data processing and electronic marketing provide many new opportunities for hotel businesses and are significantly impacting on traditional hotel business model.

The internet, Ecommerce and E business have all grown in this modern world. Several hotels in Sri Lanka they are taking advantage of this and making billions of dollars in revenue through Ecommerce. Moreover, many Sri Lankans still unaware of the opportunities offered by Ecommerce.

The researcher became interested in this study because of an observation made during an industrial visit at a hospitality firm. The researcher realized most of things that used in manually, this really slowed down productivity and placed undue pressure on members of staff and one of the most important advantages that ecommerce offers is the cost. The cost per transaction workout to be very cheap also ecommerce promotes paperless offices and processes thus contributing to savings in terms of resources too. These and many more advantages make obvious business sense for hotels to market their services online.

Aim
The aim is to discover how Ecommerce drives business success in Brookside Hotel Wattegama.

Objectives
1. To explore what are the factors that led to change Ecommerce techniques in Brookside Hotel.
2. To find out the departments which has converted to Ecommerce?
3. To analyze which department has the most impact of Ecommerce since 2017.
4. Discuss what are the problems and challenges encountered during the process.
5. To give suggestions to improve their business activities in future.

Methodology used
- Mixed research method was selected as a method for conducting research that collecting, analyzing and integrating qualitative and quantitative research.
- Selected research strategy was survey.
- Selected research sample method was probability sampling.
- 25 employees randomly selected and interviews, questionnaires, observation and documentation selected as data tools.
- Data analyzed questionnaires with 100% and qualitative from the interview.

Conclusion and recommendation
From the collected data, the conclusion and the recommendations are suggested. Currently the internet is most commonly used by hotels in Sri Lanka for communication, reservation and marketing purposes. In Brookside hotel mostly emails and booking websites are considered an important means of communications and reservations by the hotel. However, the extent of use is limited by the hotel management recognition of the importance of face to face intention with their customers and suppliers. The confidence of using booking websites and Email for communication and reservations with both suppliers and customers increase after the first meet up. After that it becomes a means for maintaining a business relationship. And it is the first step of ecommerce also it's allows the hotel to access information and maintain communication with its suppliers and customers. This can lead to more advanced Ecommerce activities in the near future in Brookside Hotel.

It realized the adoption of Ecommerce to Brookside Hotel, plays a great role in improving service delivery by the Hotel. More education should be undertaken to enlighten all the employees in the Brookside Hotel about the potential of Ecommerce also they need to come up with training and development programs and motivate their existing employees. Moreover they have been recruited talented skillful employees to avoid these problems. But still the Brookside hotel highly satisfies with their current situation comparing to other hotels, not only that 72 percent of employees said that the customers are attracted with the current situation. Brookside has more positive impact on the adoption of Ecommerce such as competitive advantage, save time, lower cost, growth of communication, easy way to gain customers, affordable employees, better quality etc.

A hotel that is truly trying to build a world class service will make every effort to develop service standards that emphasize exceptional service for every customer. So hotel need to treat every customer or guest like a very important person. Therefore Brookside hotel need to coach or train their staff to be attentive, responsive, and have a sense of urgency for everyone, regardless of their status. It should apply before, during and after the guest stay.

Efficient administration is essential for the running of any business. So this will be more important when it comes to hotel bookings. Brookside needs to consider the staff to exceed expectations as they can solve issues and problems quickly by speeding up administration through the process. However, slow running computers will also means longer wait times for customers checking in. so they need to make sure the tech is fully updated. Also through performance support system will guide the Hotel staff on live application. Therefore it helps to reduce waiting time of the guest.

Hospitality may be one of the oldest businesses in the world, but in this day and age it should come as no surprise that hotel efforts can only reach their fullest potential by adding modern technology. According to reports by Software Advice, hotels are fast adopting hotel management software like property management systems (PMS) to streamline the check-in and check-out process, generate financial reports, manage staff and automate daily tasks – saving time, relieving the hotel staff of the more tedious responsibilities and improving the guest experience. Taking it one step further, hotels that want to serve their staff and customers even better and get more Return on investment from their property management systems are turning to Performance Support technology.

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How the technological and political dimensions of globalization drives the success of success of Etisalat Company

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Abstract

Globalization opens up possibilities for gains in efficiency through international exchange based on the principle of comparative advantage. These gains are very significantly augmented with the development of communications system that reduces cost of negotiations, monitoring, and coordination. The advent of telegraph as a communication device in 1839 in Britain marked a signal change in this scenario of cost of communication.

The telecommunications industry has developed vastly since the introduction of the conventional telephone back in 1876. Among all of the infrastructure sectors, the most dramatic changes and developments are thought to have taken place in the telecommunication sector. Globalization can be defined as the process of change, increasing interconnectedness and interdependence among countries and economies, bringing the world closer through better world-wide communication. This process is changing our world dramatically and quickly, affecting economic, social, political and cultural aspects of life. Globalization is an ongoing process that is linking regions, neighbourhoods, people, cities and countries much more closely together than we have ever been before.

The world has become so quickly global and is showing no signs of slowing down. The ability to interact with the world so simply and cheaply is invading each part of our daily lives, whether it be in the home, workplace, school, or society as a whole. Technology such as the Internet, telecommunications, and travel has played a major role in impacting our culture. We now have the ability to communicate with the other side of the world at the click of a button. The means of doing this are developing all of the time and cover, Skype, SMS text messages, Multimedia messages (MMS), phone, Google+ and many other IM platforms. Not to mention Voice Over IP (VOIP) Services, which allow you run telephone calls over the internet to anywhere in the world.

Experimental

Aim of the research

How the Globalization has driven   business success to Etisalat Kandy Branch

Methodology

The method of research is mixed method which comprises of qualitative and quantitative, The strategy is survey questionnaire for basic details with interviews for the case study for the Organization.

Research Ethics
• Honesty and Integrity
This means that you need to report your research honestly, and that this applies to your methods (what you did), your data, your results, and whether you have previously published any of it. You should not make up any data, including extrapolating unreasonably from some of your results, or do anything which could be construed as trying to mislead anyone. It is better to undersell than over-exaggerate your findings.

When working with others, you should always keep to any agreements, and act sincerely.

• Objectivity
You should aim to avoid bias in any aspect of your research, including design, data analysis, interpretation, and peer review. For example, you should never recommend as a peer reviewer someone you know, or who you have worked with, and you should try to ensure that no groups are inadvertently excluded from your research. This also means that you need to disclose any personal or financial interests that may affect your research.

• Carefulness
Take care in carrying out your research to avoid careless mistakes. You should also review your work carefully and critically to ensure that your results are credible. It is also important to keep full records of your research. If you are asked to act as a peer reviewer, you should take the time to do the job effectively and fully.

• Openness
You should always be prepared to share your data and results, along with any new tools that you have developed, when you publish your findings, as this helps to further knowledge and advance science. You should also be open to criticism and new ideas.

• Respect for Intellectual Property
You should never plagiarise, or copy, other people's work and try to pass it off as your own. You should always ask for permission before using other people's tools or methods, unpublished data or results. Not doing so is plagiarism. Obviously, you need to respect copyrights and patents, together with other forms of intellectual property, and always acknowledge contributions to your research. If in doubt, acknowledge, to avoid any risk of plagiarism.

• Confidentiality
You should respect anything that has been provided in confidence. You should also follow guidelines on protection of sensitive information such as patient records.

• Responsible Publication
You should publish to advance to state of research and knowledge, and not just to advance your career. This means, in essence, that you should not publish anything that is not new, or that duplicates someone else's work.

Conclusion and recommendation

- Through the research on how the globalization has driven business success in Etislat kandy branch and also it demonstrate ample of benefits and challenges faced by Etisalat and also Globalization is breaking the gaps and epically its impact on telecommunication and information. Creating paradox between who have information and who have not. This revolution is providing chance to everyone to contribute as much as they can. Now a day's information systems are playing major role in developments of countries and the telecommunication is one of them. They need to improve with all their process in all departments, with the effect of Globalization the telecommunication industry has reached a different version of outcome.

- According to the "Analyze the drivers of Globalization which led to success in the selected organization" it's all about how the Globalization has led the organization to business success in the telecommunication industry specifically Etisalat Kandy Branch. In this analysis it's identified that ample of departments have to be monitored and supervised in order to improve and develop in the current market and also the digital technology which prevails in the organization how they are operating with great success for Etisalat.

- According to the drastic changes an improvements in the Telecommunication industry it becomes a great advantage to implement their new strategies in the technical department where the main process are conducted and also to improve their Technology department more effective and efficient for their future process. Throughout the research we observe ample of departments have to be pay attention to improve and develop, with the advancement of globalization it's being more effective to implement certain decisions like they need to focus on building network towers and to provide the best service for the customer base as well as they need to pay attention on planning out their future packages in order to compete with their competitors. Main focus should be at the employees who are working for their organization to provide motivation and push forward them to perform their best.

- Along with that we identified ample of challenges were mitigated by the Etisalat organization in each and every circumstances but they were able to find solutions and move forward with optimistism.

- Therefore ultimately the researcher comes to conclusions based on the findings as Etisalat kandy branch regarding to improve the overall performance of the organization in each departments to be more effective and efficient and also to get the maximum benefits of the Technical departments to the organization with the help of the employees.

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Identifying the best algorithm among Random Forest Algorithm, KNN Algorithm and SVM Algorithm in predicting the possibilities of having diabetes by using given symptoms

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Abstract

Artificial intelligence combined with the latest technologies, including medical devices and sensor technologies has the potential to enable the better identification and management services to deal with chronic diseases. Diabetes is one of the chronic diseases where a patient has high blood sugar either caused by the body failure to produce enough insulin or the cells failure to respond to the produced insulin. In order to identify the disease some major symptoms have been defined which are being currently ignored by the people nowadays because of the busy lifestyle. The motive of this study was to identify the best algorithm among Random Forest Algorithm, KNN Algorithm and SVM Algorithm which can prognosticate the likelihood of diabetes of people with maximum accuracy. In order to identify the best algorithm, the testing has been conducted within 50 people who are in between 20 – 60 aged. Therefore, the accuracy of the algorithm has been detected with a statistic data collection according to the symptoms given by the considering people. Therefore, the identification of the best algorithm in predicting the possibilities of having diabetes with AI can prognosticate the likelihood of having diabetes with 74.29% accuracy.

Author Keywords

Artificial intelligence, prognostication, Random Forest, K-NN, SVM

Introduction

Artificial intelligence (AI) and related technologies are progressively universal in business and society, and are starting to be applied to healthcare services. These technologies which are combined with medical devices and sensor technologies can possibly change numerous parts of hospitalization, healthcare services and management services to deal with chronic diseases. There are various research examines recommending that AI can execute just as or better than human at key medicinal services and predicting diseases. Algorithms are already used in healthcare service which performs multi-level tasks in developing health care sector. In any case, for an assortment of reasons, we believe that it in near future AI substitutes human in wide healthcare sector.

Diabetes is the most repetitive disease these days in all general public and in all age gatherings. It is a disease wherein the body doesn't deliver or appropriately use insulin. The cells in our body require glucose for growth for which insulin is very vital. When somebody has diabetes, almost no insulin is released. In this circumstance, a lot of glucose is accessible in the circulation system however the body can't utilize it. In order to identify the disease some major symptoms have been defined which are being currently

ignored by the people nowadays because of the busy lifestyle.

Methodology

The experiment was done using data of 50 people.15 actual diabetic patient's details were collected from the Teaching Hospital Gampola, while 10 actual diabetic patient's details were collected among the family and known people. Rest of the 25 people were randomly selected people for this data gathering. By gathering data mainly focusing the natural symptoms of diabetes the research criteria of predicting the probability of having diabetes or not has been tested. With the instructions of General Physicians and few final year medical students of Peradeniya State University, the probability of having diabetes comparing and contrasting the symptoms has been decided as per to the instructions. The mainly focused symptoms used are: Heavy thirst, Increased hunger, Dry mouth, Vomiting, Fatigue, Nausea, Frequent urination, Unexplained weight loss, Blurred vision. These symptoms are mostly used to identify the diabetic patients before identifying about the disease with a medical test.

This research is mainly focused on classification algorithms to use for predicting negative or positive result. The Random Forest Algorithm, which is a classification algorithm that weighs the input features so that the output separates one class into positive values and the other into negative values. This algorithm is a group supervised learning method which is used as predictor of data for classification and regression.

K-NN is known as an example-based learning, or likewise prevalent as a lazy learning, where the job is just assessed locally and all figuring is delayed until classification. The k-NN calculation is the most least complex among all AI calculations. It examines every current case and groups into new cases dependent on normal factor. Highlights for which it is exceptionally prevalent is its effortlessness of explanation and short calculation time even with such ease, it can give enormously possible outcomes. The neighbors are taken from a lot of objects for which the object property value or the class are identified. This can be assumed of as the preparation set for the calculation, though no clear training step is important.

Support Vector Machine" (SVM) is a supervised machine learning algorithm which can be utilized for both classification or regression problems. In any case, it is generally utilized in classification issues. In this algorithm, every data is plotted as a point in n-dimensional space (where n is number of functions) with the estimation of each component being the estimation of a specific arrange. At that point, it performs characterization by finding the hyper-plane that separate the two classes quite well.

Experiments

The three selected algorithms were tested using the given symptoms of diabetic patients and the rest of the data collected. Therefore, by using the Random Forest Algorithm the patients who actually having diabetes were predicted as having possibility in having diabetes with 74.29% accuracy and also three people were suggested to consult the doctor who were not under meditation already. The K-NN algorithm testing was accurate 70.86% and SVM Algorithm was 64.17% accurate. Therefore, this study identifies that the Random Forest Algorithm is more accurate and suitable in predicting the probability of having diabetes using given symptoms.

Algorithm	Accuracy	Error Rate
Random Forest	74.29%	0.32%
K-NN	70.86%	0.34%
SVM	64.17%	0.29%

Table 1 Table of accuracy of different algorithms
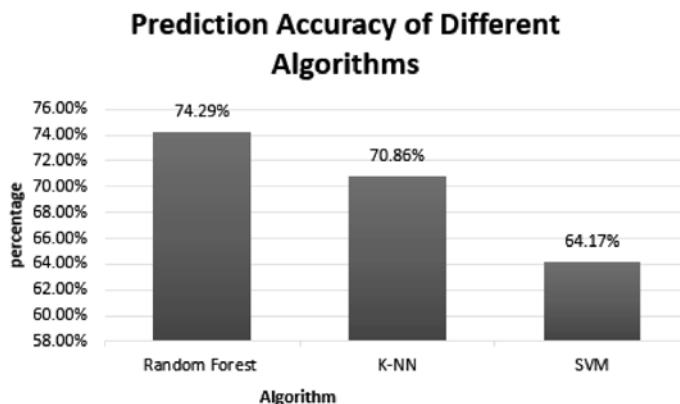
Figure 1 Graph of accuracy of different Algorithms

Conclusion

Through this research it concludes that, many chronic diseases are neglected by people in day to day life as Sri Lankans are more interactive with home remedies and treatment suggestions for diseases. But by using the most effective algorithm not only for predicting the possibility of having diabetics but also for many other diseases we can 74.29% effectively predict the illness which may suggest you to get the proper expert opinion on time. This may save lives.

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Comparison Study on Face Recognition Algorithm can be used for Credit Card Security

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Abstract

Facial recognition systems are increasingly catching on the business focuses on the market the fastest-growing, challenging and interesting area of real-time applications. The problem with credit card authentication is, Humans are Using PIN to access the credit card but the identity of that user is not verified. If credit cards and ATM cards are lost or stolen, an unauthorized user can access the Account with the PIN number. Face Recognition technology can solve this problem since a face is undeniably connected to its owner except in the case of identical twins. For this study, PCA (Principal Component Analysis), SVM (Support Vector Machine), Fisher Face are used in this research to analyzing the efficiency of the face recognition algorithm. According to the result obtained, based on the accuracy, SVM (Support Vector Machine) showed 99% accuracy, PCA (Principal Component Analysis) showed 74% accuracy, Fisher Face showed 76% accuracy. Out of the three Algorithms, the Support Vector Machine algorithm showed better accuracy for face recognition.

Author Keywords

Machine Learning, Support Vector Machine, Principal Component Analysis, Fisher Face, Python

Introduction

With the massive development of Information technology, Machine Learning has opened a door for every IT-related industry to implement technologies and systems related to Machine Learning, instead of human power. This study provides comparison study of face recognition algorithms can be used for credit card security, and this concept was taken as a prototype idea, the comparison study will help to find out the accuracy of face recognition algorithm among the three algorithms (Principal Component Analysis, Support Vector Machine, and Fisher Face). And also, this can be implemented with credit card security so that it will enhance the current PIN access security.

Even though there are other methodologies to solve this problem, still there are a very huge demand and opportunities to solve these types of problems by using face recognition

Methodology

In this study, the Algorithm was tested with an ORL dataset. The images are organized in 40 directories such as lighting and facial expressions, upright position, frontal view, slight left-right, which have names of the form sX, where X indicates the image number (between 1 and 40). In each of these directories, there are ten different images of the person's face position. In order to find the accuracy of the algorithm, the same dataset used to test above three algorithms because the ORL dataset mainly focused on face

direction. Also using this dataset it iseasy to identify the human face in different positions of the face. In order to get accuracy of the algorithm Jupyter notebook used with python software.

Experimental
The algorithm test were conducted between three algorithms (Principal Component Analysis, Support Vector Machine, Fisher Face) to have more classification and evidence of the above study, According to the result obtained, based on the accuracy, SVM (Support Vector Machine) showed 99% accuracy, PCA (Principal Component Analysis) showed 74% accuracy, Fisher Face showed 76% accuracy. Out of the three Algorithms, the Support Vector Machine algorithm showed better accuracy for face recognition.

Figure 1 the following graph shows the accuracy of three algorithms

	Fisher Face	Pricipal Component Analysis	Support Vector Machine
Algorithems Name	76	74	99
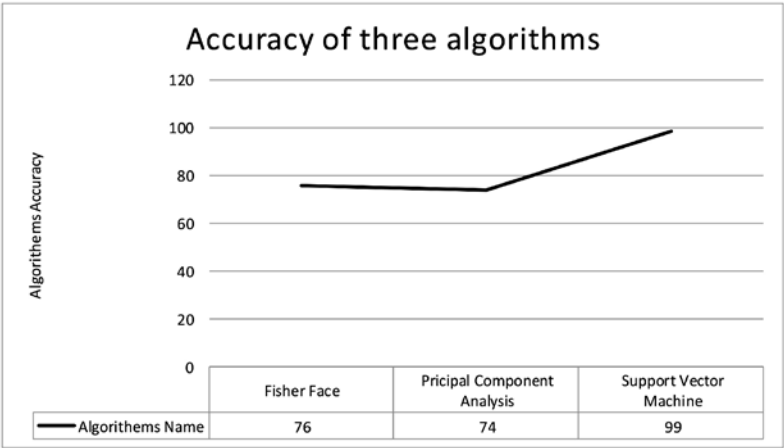
Conclusion
From the above compression conducted from the three Face recognition algorithms, it was evident that Support Vector Machine Algorithm was much efficient in finding the correct face. Overall compression summary clearly shows that Fisher Face Algorithm showed 76%, PCA showed 74% Algorithm accuracy, which concludes the SVM Algorithm showed 99% the algorithm is effective and accurate.

Later, this Algorithm can improve more into an advance such as face emotion recognize and train different datasets. Also, from the compression evident that about 99% is Support Vector Machine is getting good accuracy and algorithm and this can be implemented for credit card security.

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Analyzing and predicting the future results of high school students using AI

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Abstract

In the age of information and communication technology, technology is being used in every domain. Education is the integral part of our society consisting of the teaching, learning and evaluation process. One of the most challenging tasks in the education sector in Sri Lanka is to predict student's academic performance due to a huge volume of student data. In the Sri Lankan context, every institution has their own criteria for analyzing the performance of the students manually but to analyze the students in many criteria's is a big task. and to predict a student's future result is even difficult, Through this research academic data which was gathered was analyzed then used for accurate future prediction 5 years of data based on 50 individual students were gathered from Gelioya Muslim Maha Himalaya, Gelioya, Kandy, Srilanka, and that data was clinched and after clinching the data was divided into 70,30 proportion and 70% of data was taken to train five pre-defined binary classification models (Two-Class Boosted Decision Tree, Two-Class Support Vector Machine, Two-Class Decision Forest, Two-Class Neural Network, and Two-Class Bayes Point Machine) using R Language pre modeled script in Microsoft azure Machine Learning studio.The last year data was collected as the test case and was tested against the prediction models and the result was more than 90% accurate in all models confirming that AI and Machine learning can be used to predict the results of students very accurately.

Author Keywords

Data predicting, classification algorithm, Azure, clinching the data

Introduction

In Sri Lanka education throughout the history students performance is mesured by the results they gain at the end of examinations, their progress and knowledge level is measured through the term exams and year end exams. But every result in the school level comes as a surprise to the students as well as in some cases comes as a surprise for teachers as well.

The major reason for this surprise is that lack of understanding of the teachers regarding the students knowledge level as well the support given to a student to reach better results and grading. This study focuses on a possibility of a system backed up with Machine Learning and Artificial intelligence to predict the results of the students using historical data. In order to train and create the ML model last 5 years of maths results and students data based on 50 individual students were gathered from Gelioya Muslim Maha Himalaya.

Experimental

This experiment is based on the binary classification and the models suggested by Cortez (Cortez 2015) and using inc operation with Azure ML. The complete dataset

was divided randomly in to 70,30 proportion and 70% of data was taken for training the models.

The 70 % data was then passed to five different binary classification models through pre-defined Azure Machine Learning classification models
1. Boosted Decision Tree
2. Support Vector Machine
3. Decision Forest
4. Neural Network
5. Bayes Point Machine

After the models were trained the models scores were recorded. were tested by running the 30% test data. and the results were generated as.csv files.

The Output of five different classifying models

Model	Accuracy	Precision	Recall	F-Score	AUC	Average Log Loss	Average Log Loss
Bayes Point Machine	0.93	0.94	0.97	0.95	0.98	0.22	63.82
Boosted Decision Tree	0.91	0.93	0.93	0.93	0.97	0.22	63.60
Support Vector Machine	0.93	0.96	0.93	0.95	0.98	0.16	74.38
Decision Forest	0.93	0.99	0.92	0.95	0.98	0.16	72.99
Neural Network	0.89	0.94	0.89	0.92	0.97	0.22	63.54

Table 1- Final Results

according to the table above Bayes point Machine, Support vector Machine and decision tforest tree show 93% accuracy and other two showing almost 90% accuracy.

This study concludes with clear evidence that a system backed up with Machine Learning and Artificial intelligence to predict the results of the students using historical data is 100% possible and using the system the entire education system will be transformed to an efficient effective and trustable system.

The future implementation will be implementing this system in a background of a web page were students or teachers can come and input their data which will go to the (Azure ML) pre-defined model and then the predicted result will be displayed on the web page.

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Study on Natural Language Processing and Evaluating the Effectiveness of Text Classifiers Using Machine Learning Algorithms

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Abstract

Natural Language Processing (NLP) helps computers understand and use human language. Text Classification is a subfield in NLP that deals with categorizing given text into organized groups. This paper aims to give the reader an introduction to NLP and Text classification theoretically and show the effectiveness of each of the chosen algorithms in different classification tasks. After conducting the research logistic regression algorithm had the best average accuracy of 89.43%, given different classification tasks.

Keywords

Natural Language Processing, Machine Learning, Statistical Learning, Text Classification

Introduction

In this Information age, the amount of data in an unstructured format is staggering. If someone were to shift through this data, it will be exhausting and inefficient. Creating a Computer program That can understand language will be a very complex task that needs domain knowledge from many different fields like Computer Science, linguistics and Mathematics. But we can use machine learning methods and let the software model find out the relationship between the words by itself given supervision. This task will seem daunting from a beginners perspective, so this paper provides simple explanations on how these algorithms work, what is natural language processing, how to choose the best algorithm for text classification.

The Main Focus of this research paper is to give the reader an understanding on "What is Natural Language Processing" and the differences in the algorithms used for Text Classification

Methodology

This paper uses Both Primary and secondary research for finding facts. History of NLP and Algorithms used in this research was gathered from all the Papers, Journal Articles Written About Natural Language Processing and History of Natural Language Processing, and choosing from them what to extract given the research context. Then finding out what are the main Approaches for NLP (Statistical and Rule-Based) and finding statistical algorithms that can be used for text classification. During this Stage the following algorithms were chosen to evaluate, K- Nearest Neighbors, Naive Bayesian, Support Vector Machines, Logistic Regression, and Random Forest.

The above-chosen algorithms trained on 5 different datasets (Movie Reviews Data set, 20 Newsgroups, Twitter dataset, Spam Email, Spam Messages) with different classifications

((Spam, Not Spam), (Positive, Negative), Newsgroups). Accuracy was measured using a confusion matrix and a classification report. Both are accuracy measuring methods in the sci-kit learn Python library. Then evaluated how each algorithm performed on each of the given datasets (successful Classification) using each of the algorithm's accuracy, consistency, and lack of false negatives on all given datasets.

The Algorithms were implemented using python programming language and Jupiter notebook Software. External libraries Used: Pandas (data manipulation), sci-kit learn (algorithms, accuracy methods), NumPy (mathematical functions).

Experimental Results

When natural language processing was starting in the 1950s most of the algorithms used were hand-coded. That is, all the rules of the language should be defined and coded. Each language is very complex and the rules, conditions that needed to create these models/ algorithms were staggering. Machine learning algorithms could learn these complex rules of language. These models outperformed most of the classical algorithms that used rule-based methods. The main problem with the machine learning approach was it needed a sufficiently large dataset with labelled or unlabeled data to make it effective.
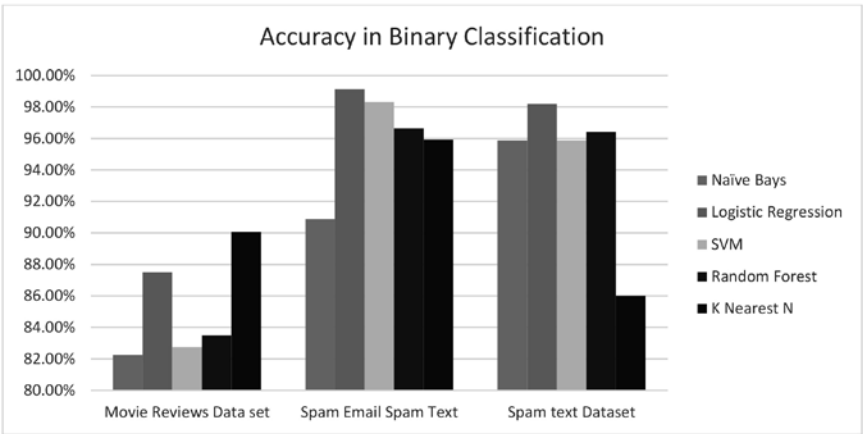
Figure 1 Average Accuracy in Binary Classification tasks

It can be observed that the K nearest algorithm works well when it has more data to work with (spam text has fewer words per each message). Also, when given a task of Spam, Not Spam Vs Positive, Negative Review These Classifiers seems to do better on Spam, Not Spam Tasks. It seems that Naive Bays Works well when there are fewer words and K-Nearest Works well when there are more words per row. Logistic Regression and K nearest does Significantly better on Movie Reviews Data set that means they have the ability to identify things like sarcasm slightly better.
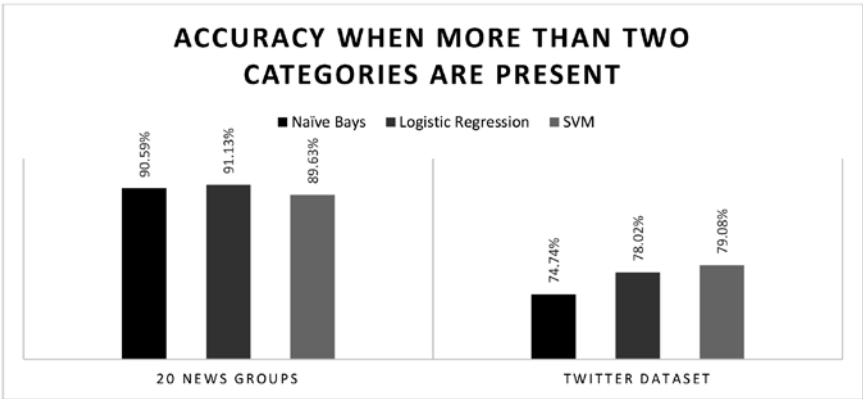
Figure 2 Accuracy Given Many Categories

If the dataset contains more than 2 categories (in this example 20) best selection would be Logistic regression classifier coming in the top with the highest accuracies followed by support vector machine and Naïve bays. K-Nearest and Decision Trees were not considered for this task due to their low accuracy and high computational cost relative to the above 3 algorithms.
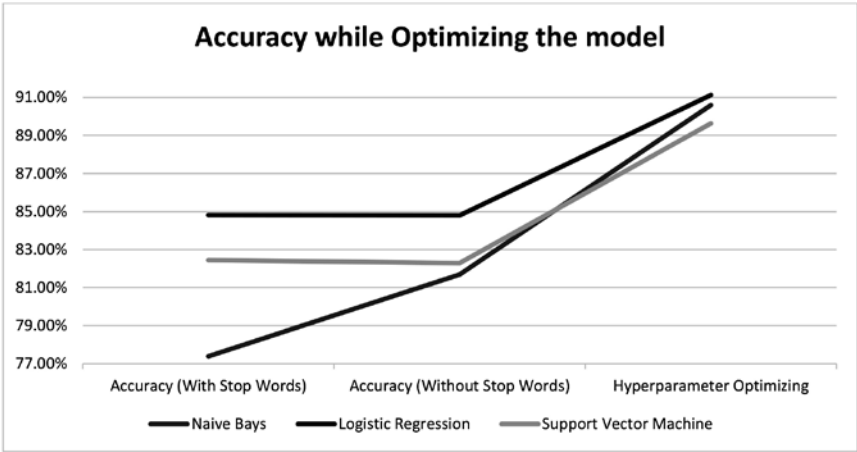
Figure 3 Optimizing the Model

Naïve Bays and Logistic regression both improved due to a cleaner dataset. When using these classifiers cleaning the data beforehand is well advised. It can be observed that removing stop words does not affect the support vector machines and Logistic Regression models, Only the Naïve Bays model show an improvement.

Conclusion

When taking the accuracy average across all the tests, logistic regression seems to perform well accuracy of 89.43%, for different datasets with different attributes (word count, many categories) while Naïve Bays and SVM following Closely. When selecting these models for classification if the dataset has 2 categories the users can use one of them from K-Nearest, Logistic Regression, Support Vector Machine, but if each instance of data contains fewer words (30 or less) using k nearest classifier is not advisable. Chosen machine learning algorithms performs differently according to the nature of the training dataset, it is highly advised to perform data preprocessing before using the data to train the Machine Learning Model.

It can be stated that, using Machine Learning Methods for Text Classification is far more efficient than using the classical way. These models can be trained to do any type of text classification task given a clean dataset and a good training cycle. These Classifiers can be improved and used to make a standalone system that can be used for text classifying tasks like recognizing suspicious texts, categorizing articles. The researched can also be extended on how to use hyperparameter tuning to yield a more accurate text classification model.

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Comparative Analysis of Machine Learning Algorithm for Predicting Heart Diseases

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Abstract

Heart disease is one of the main causes for most of deaths in the world for past few decades. According to the statistics, someone has a heart attack every 40 seconds and each minute, more than one person dies in most countries due to heart attack. A fast and efficient heart disease detecting technique is one of the major needs in medical sector to lower this rate of deaths. Data mining is one of effective technique used for predicting heart disease and various Machine Learning (ML) algorithms are used for mining such as Decision Tree, Naïve Bayes, Random Forest, IBk etc… Heart diseases are defined based on various health conditions related to the heart and many various basic causes that effect on the entire body. The heart disease UCI repository one of best datasets, which contains patient data from Cleveland database with 303 instances and 76 attributes, is used to test the performance of the selected algorithms.

The objective of this study was to evaluate the performance of algorithms used to predict the presence of heart disease in patients. In this research, six ML algorithms, Random Forest, Multilayer Perceptron, Naïve Bayes, BayesNet, J48 and IBk have been used on the data set for analysis. Performance evaluation performed based on the various criteria to evaluate the accuracy and time. The result of this research showed that IBk has best performance and accuracy over the selected algorithms for predicting presence of heart diseases in a patient.

Author Keywords

Heart Diseases, Data Mining, Machine Learning, Classification, Algorithms, Artificial Intelligence

Introduction

Heart is one of the important organs in blood circulatory system of all living organism. There are many causes which make problems to heart such as smoking, poor eating methodology, high pulse, cholesterol and high blood pressure etc. The diagnosis and predicting of heart disease in earlier stage is a challenging task in the medical industry. Heart disease prediction can be performed using data mining algorithms which can be used to help in determining the heart disease during early stages. Various algorithms, such as J48, Multilayer Perceptron, Naïve Bayes, Bayes Net, Random Forest etc., can be used for predicting heart diseases and every algorithm performs in different ways over the dataset with different performance characteristics. This paper discusses about the research conducted for evaluating performance of various selected algorithms which can be used for predicting heart diseases over a selected dataset. This paper includes a performance evaluation of J48, Multilayer Perceptron, Naïve Bayes, BayesNet, Random Forest algorithms and the suggestion of best algorithm for heart diseases prediction among them.

Experimental

Following table summarize all test results collected based on various performance metrics. Table clearly shows that these statistics have been given considering the 100 instances of the data identified in the dataset.

	MP	RF	NB	IBK	BN	J48
Correctly Classified Instances (%)	98	100	83	100	83	93
Incorrectly Classified Instances (%)	2	0	17	0	17	7
Kappa statistic	0.9548	1	0.6239	1	0.6239	0.8406
Mean absolute error	0.0339	0.0943	0.2751	0.0092	0.271	0.1211
Root mean squared error	0.1433	0.1266	0.3536	0.0094	0.3525	0.2461
Relative absolute error (%)	7.535	20.9647	61.166	2.051	60.0431	26.9304
Root relative squared error (%)	30.2401	26.7192	74.6516	1.9749	74.4106	51.9514
Total Number of Instances	100	100	100	100	100	100

Table 1: Algorithm Analysis Summary

* MP = Multilayer perceptron * RF = Random Forest *NB = Naïve Bayes * BN = Bayes Net

According to the following graph, Random Forest and IBk display a highest accuracy of 100% while NaïveBayes and BayesNet shows the lowest accuracy compared to the selected other algorithms. Multilayer Perceptron shows a high accuracy over J48 but both shows less accuracy than Random Forest and IBk. According to these statistics RF and IBK both are best algorithms than the other for analyzing and predicting the heart disease where accurate prediction results can be achieved.
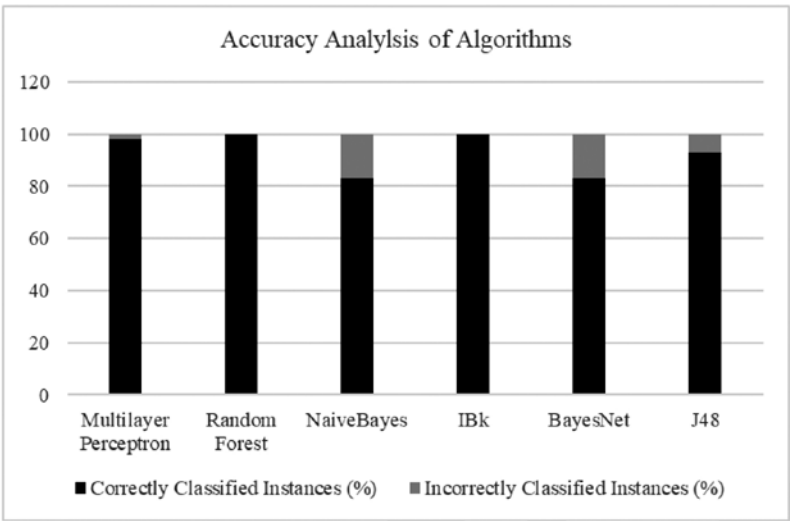
Fig 1: Analysis of Algorithm Accuracy Results

This paper presents an intelligent recommender system that predicts and assesses the short-term disease risk for heart failure patients. The system is developed aiming at improving the quality of clinical evidence-base decisions and helping reduce financial and timing cost taken by patients. A time series prediction algorithm is proposed to predict short-term risk for the heart failure patients. Based on the prediction result, the

system provides a recommendation to the patient for necessity of taking a medical test. The work makes theoretical contribution by the time series prediction algorithm and applicable contribution by an intelligent system to improve the quality of health care services.

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Impact of implementing a smart shopping system in a supermarket

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Abstract

Shopping is an activity in which a customer browses the available goods or services presented by one or more retailers with the potential intent to purchase a suitable selection of them. Now a day's people are more prefer to cover their daily grocery needs in supermarket. A supermarket is a self-service shop offering a wide variety of food, beverages and household products, organized into sections and shelves. It is larger and has a wider selection than earlier grocery stores. But now a days the people who are coming to buy foods in supermarket are becoming less. The main reason for this is once the person who came to buy a small thing also have to wait for the long time to pay the bill that time people are losing the interest in buying things in supermarket. By implementing a smart shopping system. Where people will do their purchasing without help of any human interaction. which means it's a supermarket without any employs at the counter. A research has been conducted through a survey to reduce the issues the customers are facing during their purchasing and analyzed to see the effectiveness of smart shopping system. Finally, it concludes by implementing such smart system. it helps most of the customers to fulfil their purchasing needs and save lots of time.

Author keywords

supermarket, self-service, customers, employees, purchase, system, products

Introduction

Supermarkets have made life easier for people. It took a lot of time to get all the grocery items and other household items because these products were not available in one place. Customers visit different stores to buy the items they need. But now there are all the items from the grocery store in supermarkets, and vegetables for electronic and hardware products under one roof. The key concern for waiting customers is the time, limited queue and standby area. Variable type, location and seasonal offers depending on the number of customers. The Visit method is a series of gaps in customer's attendance. These conventional formats affect customer satisfaction and expectations.

This research purpose is to give a permanent solution to the problems that customers facing during their purchasing in the supermarket. By implementing a AI system to the supermarket it will be a great solution.

This supermarket system is; it is a supermarket without any employees.it means in this supermarket system there won't be any human (employee) interaction. In the supermarket for every product there will be barcode and the basket also has barcode reader.

People when there are buying things in the supermarket customer have to scan the

particular thing (goods) barcode with the help of barcode scanner in the basket and customer have to put it inside the basket. Whenever buying things in the supermarket they have to scan the product barcode using barcode scanner in the basket. Near the exit door, there is a main barcode scanner with the help of that customer have to scan the basket barcode and after it was completed it will show the total amount of the things that customer purchased and customer have to pay the bill using any ATM card.

Methodology
Inorder to check the effectiveness of implementing smart shopping system in a supermarket. There are two survey has been conducted. First survey was conducted to know the, each customer how many time shopping in a supermarket for per week, time talking for select the right good(purchasing). After bought the things or goods how long they are spending in the queue to pay the bill. To complete this survey randomly 20 supermarkets was choosed within Kandy city. From each supermarket like from 50 people's data was gathered then altogether from 1000 peoples the data was gathered and below I have given the average amount what customers says for each questions.
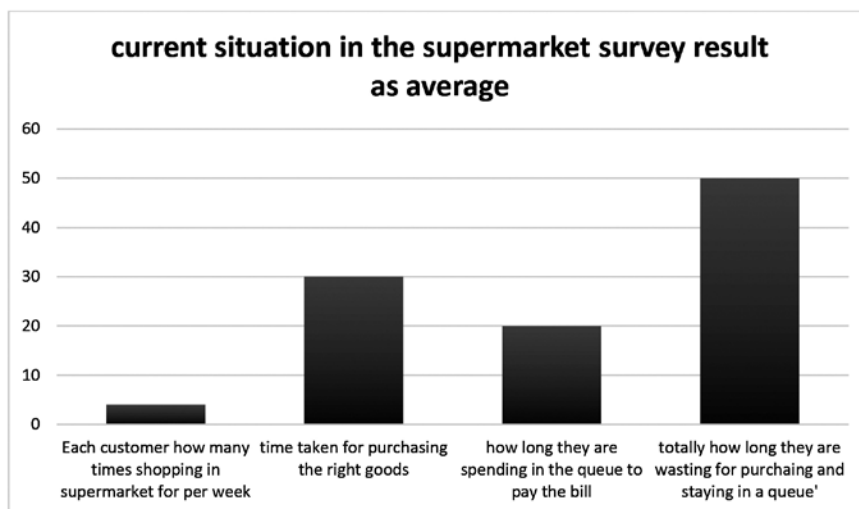
Next survey was conducted to know the effectiveness of implementing smart shopping system in a supermarket. Here we focused what will be going to happen if smart system was implemented to the supermarkets. To complete this survey randomly 20 supermarkets was choosed within Kandy city. From each supermarket like from 50 people's data was gathered then altogether from 1000 peoples the data was gathered and below I have given the average amount what customers says for each questions. The data was gathered through interview method. From the people who are covering their grocery needs in the supermarket. Below are some sample questions that was asked from the customers during data collection.

• Question 1 : what do you think about being in a que after bought all the things?
• Question 2 : what do you think about changing supermarkets into smart ways?
• Question 3 : if we change this supermarket system into smart ways, is it useful for you?

2	Supermar	Location		Customer feedback	
3				Good	Averrage
4					
5	Keels sup	Peradeniya		50	18
6	Cargils foc	Peradeniya		70	11
7	Arpico Su	Peradeniya		85	20
8	Cargils foc	Katugastota		60	9
9	next supe	Hewaheta		77	13
10	Cargils foc	Getambe		80	17
11	Nihal's su	Kandy		50	7
12	Arpico dai	Getambe		35	9
13	Cargils foc	kandy		44	16
14	central pr	Bogambara		65	20
15	Hewage N	Kandy		39	12
16	Arpico dai	Kandy		55	13
17	Royal mal	Kandy		38	16
18	Softlogic (	Peradeniya		42	13
19	Nihal's su	Peradeniya		28	6
20					

Above are results that got from the customers from their side about impact of implementing a smart shopping system in a supermarket

Experimental
Amazon describes Amazon Go as "a new kind of store with no checkout required". That means, when you shop at Amazon Go, you'll never have to wait in line. The store works with an Amazon Go application. You enter Amazon Go, take the products you want and, thanks to the app, just leave again. Using National Association of Convenience Stores data, RBC estimates a regular convenience store of the same size would bring in just over $1 million a year in sales

Annual revenue per square foot, based on store size
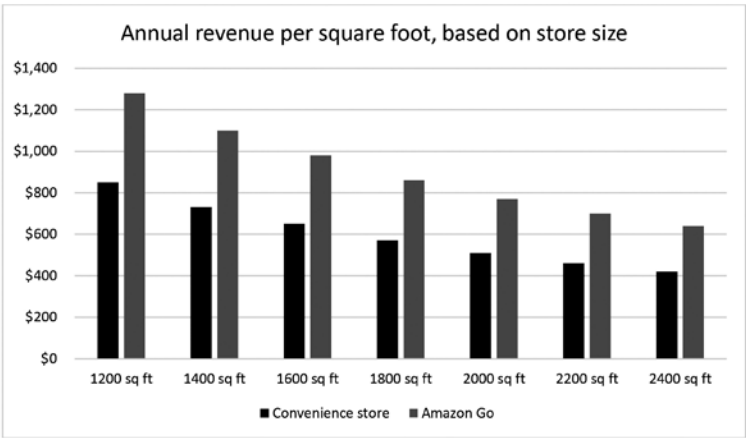
according to a Bloomberg report, meaning the futuristic shops could generate in the ballpark of $4.5 billion in sales a year if the company follows that aggressive store rollout plan and if new-store sales are similar to current RBC estimates
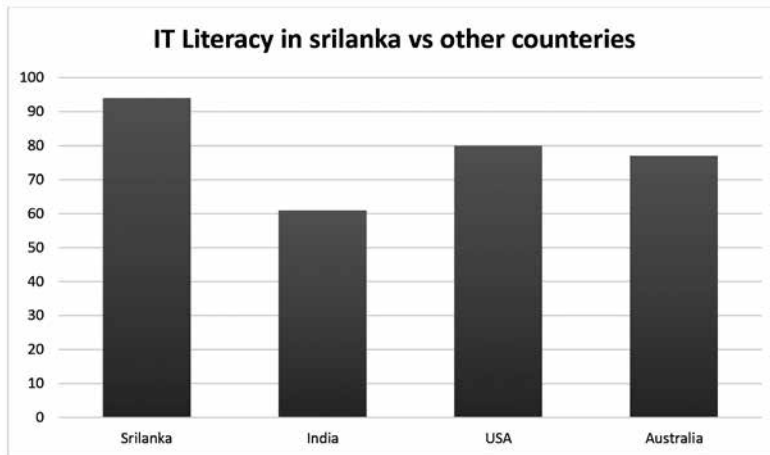
Conclusion
Considering all the findings and survey conducted. It clearly showing that effectiveness of implementing a smart shopping system in a supermarket. Amazon describes Amazon Go as "a new kind of store with no checkout required". That means, when you shop at Amazon Go, you'll never have to wait in line. The store works with an Amazon Go application. You enter Amazon Go, take the products you want and, thanks to the app, just leave. According to their finding they are earning more sales annually. Their IT literacy is Lower than srilanka. But srilanka has higher IT literacy than their countries. So. The country where they have less IT knowledge earning more money through such kinds of smart system means srilanka has excellent IT knowledge mean here we can earn more income then them. So, finally by implementing a smart system to the supermarket it will be a great advantage

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Using Machine learning to stop Distributed Denial of Service with the help of Artificial Intelligence

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Abstract

Artificial Intelligence (AI) is an area of computer science that refers to the simulation of human intelligence in machines that are programmed to think like humans and react. Machine Learning is an application of Artificial Intelligence (AI) which can make software applications to become more perfect in predicting results without being clearly programmed. Machine Learning is a branch of AI which is based on the idea that the machines can be built to process data and learn on their own without continuous management. In computer Network, security can be breached by performing cyber-attacks, viruses, unauthorized accesses etc. These Security Vulnerabilities are mostly caused because of Poor password, Unsecured Protocols, using out dated devices etc. because of these Vulnerabilities, personal data and information of people can be copied, modified and deleted. In my research I have found out DDoS (Distributed Denial of Service) attack is one of the major security vulnerability in many network devices. By using AI and ML, it is possible to identify these vulnerabilities and provide proper solutions for safer network. 80% solutions and recommendations were given to the vulnerability by using Artificial Intelligence and Machine Learning. The main target of this research was to identify the effective use of Artificial Intelligence and Machine Learning against DDoS attack.

Keywords

Artificial Intelligence, Network Security Vulnerabilities, Protocols, Machine Learning, Distributed Denial of Service (DDoS)

Introduction

Artificial Intelligence is the way of solving problems by using human intelligence in machines. Artificial Intelligence is a process that makes machines to think and react like humans. Machine Learning is an application of Artificial Intelligence that provides software applications to become more perfect in predicting results without being clearly programmed.

In computer network, security is the most important part and hardest part. The security of the network can be breached by performing cyber-attacks, viruses, unauthorized accesses etc. These vulnerabilities can affect people's personal data and information. Mostly these vulnerabilities in networks are happening because of weak or insecure devices. Nearly 3000 DDoS attacks happen every day in computer networks.

In this research we have found out the following are few key aspects of DDoS attack.

• DoS (Denial of Service) attack is a security event that can happen when an attacker avoids valid users from accessing specific computer systems, devices, services or other IT resources. DoS attacks normally function by overwhelming or flooding the targeted machine with requests until normal traffic is unable to be processed.

• The DoS attack can be performed by various types such as volume based attacks, protocol attacks, application layer attacks.

• The below table shows the impact of DDoS attack in routers (TP-LINK and D-LINK).

Confidentiality Impact	None (There is no impact to the confidentiality of the system.)
Integrity Impact	None (There is no impact to the integrity of the system)
Availability Impact	Complete (There is a total shutdown of the affected resource. The attacker can render the resource completely unavailable.)
Access Complexity	Medium (The access conditions are somewhat specialized. Some preconditions must be satisfied to exploit)
Authentication	Not required (Authentication is not required to exploit the vulnerability.)
Gained Access	None
Vulnerability Type(s)	Denial Of Service

Table 1 Score and Vulnerability types of DoS attack

Findings

As we found in our research, these threats are common in wide range of networks. Through different data pipelines tons of data can be gathered. These data is fed to the classifiers which is a part of the machine learning process. By analyzing this data ML will identify network patterns using ML algorithms. By comparing these network pattern and data with the already fed data set, the ML can now find the abnormal network patterns or anomalies in the network. And these data can be organized and categorized using Machine Learning algorithms. Because it's a learning process the ML may miss a bad data packet and even it can block a good data packet in the network. So continuously this ML will learn new types of data or network patterns.

Machine Learning uses pipe lines which use many Classifiers and Algorithms all working together and analyzing lots of internal and external data points. AI systems can be implemented in these data points to gather more accurate and reliable information. With the help of ML this research identifies the high possibility of implementing these ML techniques to an AI systems or AI devices. May stop the common vulnerability of DDoS attack.

Through this research it is recommended to use routers, intrusion detection or prevention systems with capability of AI and ML. without human interference these ML data can be again analyzed by the AI systems or devices and take immediate actions to avoid network downtime.

Conclusion

Through this research we have found that using Machine Learning with the help AI devices reduces the problem. By feeding the techniques of AI and Machine Learning to the router we can protect the network from vulnerabilities. The better way of solving all the problem is changing the outdated routers and recommend AI routers.

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ge=1&hasexp=0&opdos=0&opec=0&opov=0&opcsrf=0&opgpriv=0&opsqli=0&opxss=0&opdirt=0&opmemc=0&ophttprs=0&opbyp=0&opfileinc=0&opginf=0&cvssscoremin=0&cvssscoremax=0&year=
[Accessed 5 08 2019].

Identify and implement the best artificial intelligence algorithm to detect objects in a set of video sequences

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Abstract

The traffic collision is one of the major factors that is growing enormously in Sri Lanka and monitoring it has become a challenging task for human operators. According to statistics of the last few years of traffic offense in Sri Lanka, it has 19680 cases related to reckless or dangerous driving 151(2) MTA, 239082 cases related to violation of road rules 148 (1-14) MTA and 6862 cases related on disobeying Police signal & directions 162 MTA. It is difficult for the Sri Lankan police to monitor the suspicious behaviors of traffic collisions for a long period due to massive data involved. Also, illegal trespassing and border encroachment have a huge predicament against the rules and regulations of Sri Lanka Police. The objective of this research was to implement an artificial intelligence algorithm to detect and track suspicious and unusual events in the video sequences using Object Detection concept. The object detection in visual surveillance system needs a robust, accurate and fast method for detecting and tracking moving objects since this information are incredibly important in making valuable decisions. The three Object detection algorithms such as YOLO (You Only Look Once), Fast R-CNN (Fast Region-based Convolutional Network) and SSD (Single Shot MultiBox Detector) were applied in this research for tracking the vehicles involved in the traffic collisions. And finally, the above three algorithms were implemented with the use of predefined data sets and the tool "Tensorflow". Based on the test results obtained, in which for YOLO 90%, R-CNN 68% and SSD 70% with consideration of efficiency, performance, and accuracy, YOLO is chosen as the best algorithm to detect objects successfully.

Author Keywords

Artificial Intelligence, Object Detection Algorithm, YOLO, SSD, R-CNN, Tensorflow, Visual Surveillance System

Introduction

Object detection is a computer vision technique for locating instances of objects in images or videos and is the process of finding real-world object instances like car, bike, TV, flowers, and humans in still images or Videos. Object detection algorithms typically leverage machine learning or deep learning to produce meaningful results. When humans look at images or videos, we can recognize and locate objects of interest within a matter of moments. The goal of object detection is to replicate this intelligence using a computer. It allows for the recognition, localization, and detection of multiple objects within an image or video sequence which provides us with a much better understanding. In order to track a dynamic object in a video sequence, firstly, feature points are extracted in the interest object, and then the target object is recognized by extracted features. Finally, detected object tracking is carried out. The object recognition consists of two main steps. One is extracting an interest feature point in the target object. The other is matching the corresponding point at the target video sequence. In object

recognition based on feature, the extraction of accurate features in target has influenced the performance of object recognition. And this concept is going to be implemented in reducing the traffic collisions, which will make the process of detecting and tracking the suspicious and unusual events of drivers much effectively and accurately within a couple of seconds. Interpreting the object localization can be done in various ways, including creating a bounding box around the object or marking every pixel in the image which contains the object (called segmentation). Traffic collision detection can be performed by using object detection algorithms, such as YOLO, SSD, R-CNN, Fast R-CNN, etc. This paper discusses the research conducted for evaluating the performance of the selected algorithms based on criteria such as accuracy, speed, efficiency which can be used for detecting objects over a selected dataset effectively and the suggestion of the best object detection algorithm.

Experimental

For this study, three major Object Detection Algorithms, which are YOLO, Fast R-CNN and SSD were implemented and tested with the use of predefined data sets found in "Kaggle" and "GitHub" data repository. The dataset were collected from Ayoosh Kathuria's GitHub repository (Kathuria, 2019). The selected algorithms were implemented and experimented in an open-source Deep Learning framework "Tensorflow" and the codes were run using Google Colab Notebook and all experiments were carried out with the same hardware and software configurations for the same set of images. The algorithms were evaluated based on accuracy, effectiveness, speed, and performance and then the best algorithm was selected.
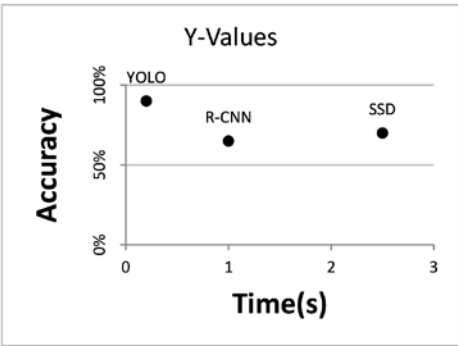
Figure 1: Accuracy vs Time graph
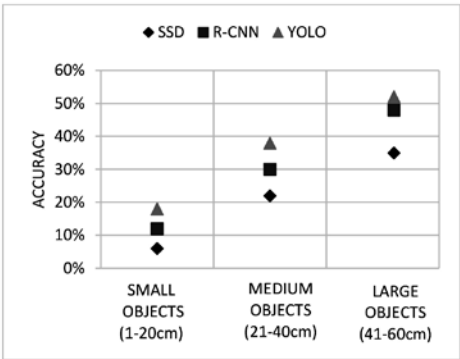
Figure 2: Accuracy vs Size of objects graph

Figure 1 depicts the results of the accuracy evaluation in percentage concerning the time measured in seconds for the three popular object detection algorithms. Based on the evaluation, YOLO takes less time to detect the objects accurately and shows high performance in correctly identifying the object than the other two algorithms. R-CNN and SSD consume more time to detect the objects and has a low percentage rate of accuracy when compared to YOLO. Similarly, Figure 2 depicts the accuracy evaluation in percentage concerning the size of the objects measured. Based on the results, YOLO shows a high accuracy rate for detecting small, medium and large-scaled size objects than R-CNN and SSD algorithms. When considering the test results obtained, in which

for YOLO 90%, R-CNN 68% and SSD 70% with consideration of efficiency, performance, speed and accuracy of the evaluation carried out with respect to the speed and size on the three popular algorithms, YOLO consumes less time and produce high accuracy score for various size images, thus YOLO is considered as the fastest, high accurate and most suitable algorithm for detecting all range and sized objects.

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Available   at: https://github.com/abhinavsagar/google-colab-notebooks/blob/master/
object_detection.ipynb
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Load balancing by Different type of AI

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Abstract

Computer Network Load balancing has become an important part to in the computer network to get the maximum use of the network and network resources. Load balancing between two or more computers, network, storage devices or other devices, ultimately to deliver fast service with higher efficiency. Load balancing is accomplished through software, hardware or both. But if many users try to access the networked resources simultaneously then the network will be unable to handle the load, they may experience slow load times or may be unable to connect at all. it becomes a necessity for developers and researchers to design and implement a suitable load balancer for parallel and distributed network environments. In this research the following network algorithms such as round robin algorithm, queue algorithm, local queue algorithm, Threshold Algorithm were separated to balance the network traffic by giving prioritizing the algorithm in the network. This can help the internet user in the network to get high bandwidth. The aim of this research is to shows a clear idea of how to perform Network traffic load balance using Network paths and discusses the advantages and disadvantages of performing load balancing. Through this research the readers will be able to clearly understand the effectiveness of load balancing in computer network.

Author keywords

Machine Learning, hardware or software, Algorithm, load balancing, Router, round robin algorithm, queue algorithm, local queue algorithm, Threshold Algorithm

Introduction

The project is about controlling the network and balance the load. It is distributing the work load in the multiple computers. It is minimizing the overall responsible time. It is minimizing the total waiting time of the network. In this technique traffic is divided in to several protocol path. After that clearly explain what is load balancer. A load balancer could be a piece of hardware (or virtual hardware) that acts sort of a reverse proxy to distribute network and or application traffic across completely different servers. A load balancer is employed to enhance the coincident user capability and overall reliability of applications. A load balancer helps to enhance these by distributing the work across multiple servers, decreasing the general burden placed on every server. This are the algorithms going to be test,
• Round robin algorithm
• Threshold algorithm
• Center queue algorithm
• Local queue algorithm

Methodology

There are many algorithms used as load balancers in order to distribute traffic among the servers. But most commonly only one algorithm is used at a time. This paper proposes a technique which is a combination of three algorithms which in turn could enhance the

performance of a load balancer. Resource utilization may be improved by equal load distribution.

This research paper contains four algorithms, Round Robin Algorithm, Threshold Algorithm, Central Queue Algorithm, Local queue Algorithm and all the four algorithms have been tested with consideration of the parameters such as Overload Rejection, Fault Tolerant, Forecasting Accuracy, Stability, Centralized or Decentralized, Nature of Load Balancing Algorithms, Cooperative, Process Migration, Resource Utilization.
Data has been collected as primary source data by using 20 computers which are with same functionalities in order to test the four algorithms. These data have been collected manually by the researcher to perform the testing of the research. All the data collected was used to compare the considering algorithms.

Experimental
In order to test the research assumptions that people personal views on while transferring different data. A basic survey was conducted among 20 PC's. the testing was conducted through transferring different data as well as applying some different algorithms the testing was conducted. The collected data has been arranged and analyzed according to the required information forms in order to satisfy the requirements of the research purpose. And has been tested according to the strategies and has been declared the most beneficial factors and the least beneficial factors for the people while their transferring different data. According to testing conducted among many algorithms the round robin load balancing method was choosed. Round robin is the most widely deployed load balancing algorithm. Using this method, client requests are routed to available servers on a cyclical basis. Round robin server load balancing works best when servers have roughly identical computing capabilities and storage capacity
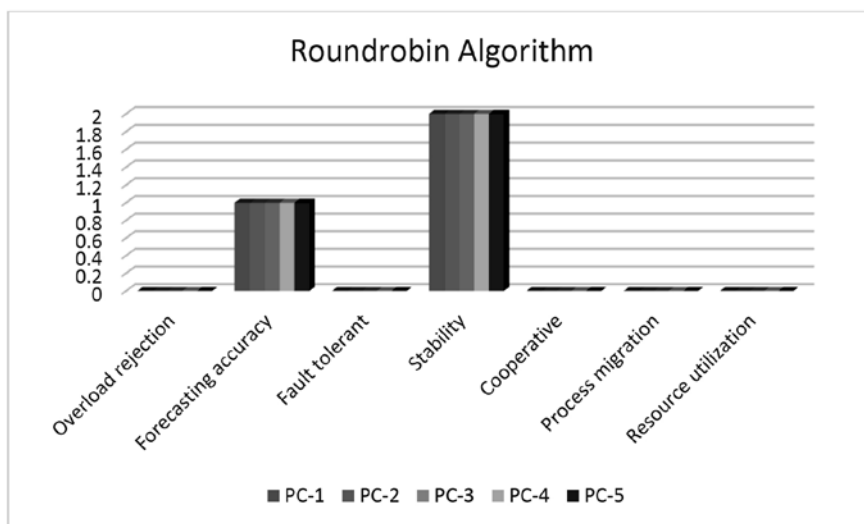
When checking among the PCs were mentioned to show their demo-graphical data, for example, algorithms run in several PCs. From the total of 20 PCs, 25% (pc=1-5) were checked using round robin algorithm. When checking 2.00 rated for the stability Also 1.00 rated for Forecasting accuracy. Among others all the things are in same position.

Conclusion

In this research, various load balancing algorithms in network environment are analyzed and various issues are also discussed which must be taken into account during designing of new load balancing algorithms. In literature existing static and dynamic load balancing algorithms are discussed and comparative analysis is performed on the basis of different metrics parameters like performance, scalability, throughput, resource utilization, fault tolerance, response time etc. Further work can be done by exploring new efficient load balancing algorithm which can maintain better balance among parameters and also helps to achieve great load balancing in network.

Load balancing algorithms work on the principle that in which situation workload is assigned, during compile time or at runtime. The above comparison shows that comparison of threshold algorithm, central queue algorithm, local queue algorithm and round robin algorithm. But the same time round robin algorithms are always considered better than all other algorithms.

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Possibility of exploiting IoT Devices to execute autonomous Cyber-attacks

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Abstract

Nowadays, smart machines are made by various sophisticated technologies such as Artificial Intelligence (AI) and Internet-of-Things (IoT). AI machines or programs can execute tasks like human execute cognitive functions. IoT is a network of smart devices where the devices can communicate and perform tasks with or without a human interaction. As the implementation of these devices, they have vulnerabilities majorly because of the security issues and misconfigurations in these devices. These vulnerabilities can be used to execute cyber-attacks, and this research is focused on identifying these vulnerabilities and exploiting them using an AI centralized system, and use this system to execute cyber-attacks autonomously using IoT devices. Currently, the number of IoT attacks has increased from 6,000 (in 2016) to 50,000 (in 2017); a 600% rise in just one year, and 40.8% digital homes worldwide contain at least one device that is vulnerable to cyber-attacks. Thus identifying the possibilities of autonomous cyber-attacks using IoT devices is crucial in order to mitigate the risk and be secured. This research helps the future development of IoT device vendors and independent developers to manufacture more secure devices to extend their services.

Keywords

Artificial Intelligence, Cognitive, Cyber-attack, IoT (Internet-of-Things), Vulnerability, KRACK.

Introduction

IoT is a network of smart devices where they can communicate with each other and perform specific tasks with none, partial or full human interaction. These devices can act major roles. Such as;
• Make a platform to be connected.
• Share services with low cost.
• Ability to work with big data.
• Ability to minimize human interaction and automate tasks.

Commonly, to develop an autonomous system, it needs features like self-learning, decision making and automation. For this research, identifying following facts are crucial.
• Mostly exploited vulnerabilities in IoT devices.
• Most suitable AI techniques to build an autonomous system.
• Possibility to use the autonomous system to execute cyberattacks autonomously by the exploited IoT devices.

Vulnerabilities in wireless communications, protocols, and misconfigurations are common in IoT devices. As an example, following vulnerabilities can be seen in smart vehicles and smart phones, and a combined security research team has found that

hackers could exploit these vulnerabilities and override the safety features of a smart car (Admin, 2019).
• Protocol and code vulnerabilities.
• Vehicle software and mobile app vulnerabilities.
• Wireless connection vulnerabilities
• Malware.
Also, the Amazon® Kindle 8th Generation devices were still affected with KRACK vulnerability (Abrams, 2019).

Protocol vulnerabilities can happen due to misuse or incorrect use of protocols. Use of insecure wireless connections, use easily guessable passwords, and use of less secure encryptions are common vulnerabilities in wireless communications. Also, download and use insecure apps from unreliable third parties, and use misconfigured apps and devices can majorly lead to occur a malware risk.

Social engineering acts an enormous role in hacking, and with a good effort, it is possible to have even the blueprints of a product. Also, an attacker has the possibility to take advantages by using available pentesting tools such as, use Nmap to scan the security and explore the network, use Metasploit to create Trojans and exploit them to gain access to unauthorized devices, use Aircrack-ng to analyze wireless networks and use John-the-Ripper to try to crack passwords. Neural networks (NN) can be used for self-learning, because algorithms can be implemented to act them alike cognitively to recognize and even build relationships between each data. Thus, NN can be built to learn itself either an attack success or fail, and it becomes possible to create or decide another attacking method. An expert system can provide expert knowledge about vulnerabilities and attack possibilities.

Methodology
A NN has built which has self-learning with decision making capabilities. Also, another application is built to act as the centralized system (CS) with the help of a server to support with effective processing power and storage. The NN was initially trained using a known set of data about vulnerabilities and attacking methods. Then, the new self-learning algorithms can be implemented to learn about new attacking methods.

This centralized system is used to hack the IoT devices using known methods first. Depending on the IoT devices, the most suitable known attacking methods will be selected by the system itself. If the attack is successful, then the CS stores relevant details in the storage including attacking method, used variables and data set. If the attack fails, then the CS also stores failure details and try another possible known method. Also, again if it fails, then the NN uses the knowledge to generate new attacking methods. By that, the CS can use new self-learned methods to attack. By all of this hacking, the CS can make a network of vulnerable IoT devices. Also, the CS can categorize the identified vulnerable IoT devices according to their features.

(a) Mechanism of hacking the IoT devices.   (b) Mechanism of executing cyberattacks.
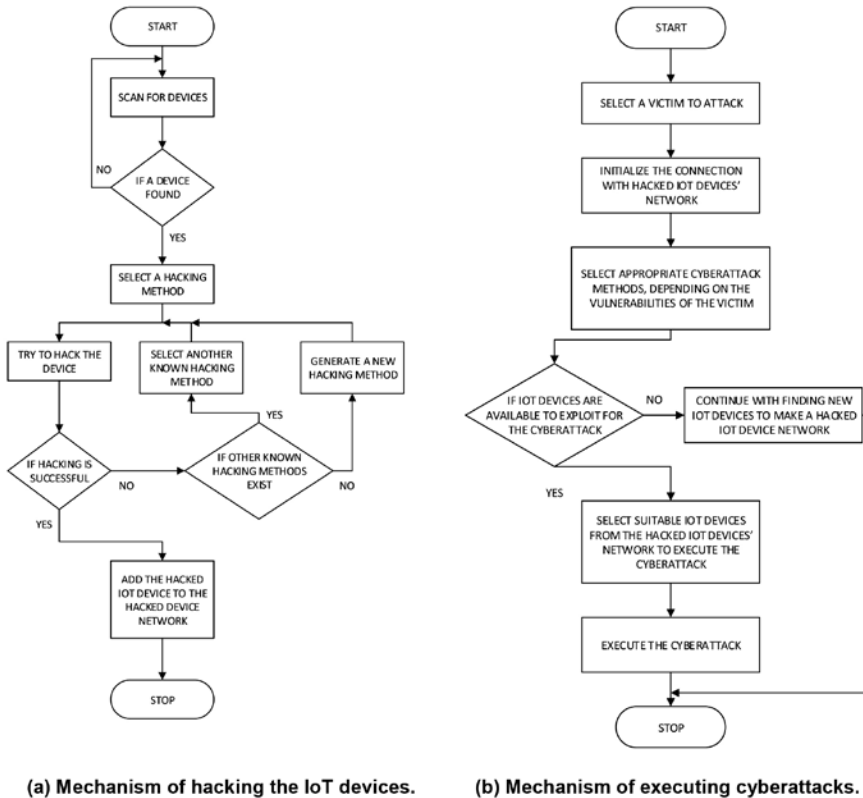
Figure 1: The mechanism of the Centralized System; (a) Hacking IoT devices, (b) Executing cyberattacks.

Findings
By the above findings, there is a high possibility that the exploited multiple IoT devices can be used to execute cyber-attacks for selected devices or computing systems by acting as a single unit.

Conclusion
Through the conclusion of the research it's clear that even the most secure IoT devices has the possibility to be vulnerable for any other known or unknown attacks. Moreover, by building autonomous systems with more processing power with high-end devices and new technologies, it is possible to use them for organized crimes, and it can obviously become a significant threat. Also, it is obvious that there is the possibility to have the risk of being utilized by other IoT devices to execute cyberattacks. Therefore, these risks should be identified in order to mitigate the risks, and stay safe as much as possible in this connected world.

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Recognition of Medicinal plants Using Multi-class Classification of Artificial Intelligence -Based on the shape of the leaf

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Abstract

Medicinal plants can be considered as a valuable natural resource that is very important to all animal creatures on this earth. But the saddest thing is that present generation has got very poor knowledge about these plants and even poor skill in recognizing these. Hence in this research, it provides an application to individuals to identify medicinal plants based on artificial intelligence. This application suggests the medicinal plant along with its medicinal value. In order to do this research, feature extraction of image data set was done using "Keras" neural network library using multi-class classification and neural network was trained in order to recognize medicinal plants. Once the application recognize the plant leaf, corresponding diseases that it can treat are extracted from a database. Testing of the application was done by different test cases using different medicinal plants' leaves. Length, width, shape, color and vein distribution of plant leaves were considered when selecting test cases. In testing, it was checked whether the application recognize the plant correctly. According to the test result, it has got that 96% of accuracy in recognizing plants which is trained with this system. Hence this application can be trained more and can be used to improve one's knowledge about medicinal plants.

Author Keywords

Neural network, Medicinal plants, Leaf shape, Plant recognition, Computer vision

Introduction

Srilanka is a country which is sustained with about 1500 species of medicinal plants. Out of them about 208 species are frequently used for different Indigenous medical practices. [2] But knowledge about these plants are very poor among our society. Hence people try to destroy those plants thinking that those are unwanted. Ultimately there will be a chance of considering this valuable resource as an endangered category.

Our ancestors have got use of these plants and cured their disease conditions effectively with less or no side effects and also without spending much more money. But nowadays even for small disease condition people tend to visit doctors for tablets other medicines which are having more side effects and which are more expensive.

If there is a way to aware people with the knowledge of these medicinal plants and changing their mindset to save these plants, it would be a great thing for the society. Some of the basic steps have been taken by some organization to publish the details and value of these plants in websites. But still the problem remains the same as there is no method to check about specific plant without knowing the name.

Hence a method has been suggested and conducted as a research to solve this problem.

An application has been developed using artificial intelligence to provide an effective system to identify medicinal plants, based on the shape of the leaf. If somebody doesn't know about a plant he would be able to feed an image of a leaf of that plant to this application then the application will suggest the result. If that leaf is already trained, name and the medicinal value of that plant will be suggested. If not, application considers leaf as "Not under medicinal category". This application can be trained more in the future with more data set of the leaves of medicinal plants in order to improve with more accurate enhancements.

Methodology

This research has been developed using "TensorFlow" software library in order to implement deep learning. Deep learning is the technique used here to provide artificial intelligence to this application. Furthermore deep learning has been developed and evaluated with "Keras", a python library in TensorFlow.Using "Keras" some steps have been followed in order to implement a neural network model for multiclass classification. Here there are more than two classes to be predicted. In other words there are many plant species to be identified. But for this research only three plant types have been considered which are Emilia exserta, Hemidesmus indicus and Cardiosprmum halicacabum.

In order to implement the neural network model and predict the plant, following steps have been carried out. Coding has been done in "Jupiter" which is a python development environment.

Indexing data
•In order to use the data(images) have to be listed properly.

Resize and gary scale images
•To bring all images to same size and same color scale.

Convert image list to an array
•Array of size [image size][image size].

Flatten images
•Derive a matrix.

Lableing
•Lableing the images and assign labled images to each class

Shuffling
•In order to make more stablize in identifying features.

Defining Parameters of the network
•batch size,of output classes,epochs,channels,convolutional filters,size of pooling,convolutional kernel size

Trainning data
•80% of the total data has been used for trainning.

Testing data
•20% of the total data has been used for trainning.

Call the model

Prediction
•Predict the output class of a new test image

Once after carrying out above processes the network model has to be deployed to a web service in order to use by any user, which means a web application has been developed which uses this neural network model to recognize medicinal plants. Here web application has been coded in HTML and JavaScript which makes a call to a web service that is written in Python. (HTTP request).According to the HTTP request, web

service provides the user the prediction (response) of the expected image to the web application. And according to the predicted result (plant) medicinal value is extracted from the database for the identified plant.

Experiment
In order to check the accuracy of this application, 50 different images of the trained three plants were tested with the application (Artificial intelligence) and checked it with manual identification (Natural Intelligence). According to the test results it could found that 96% accuracy in recognizing the plant by the AI application.

Conclusion
As this application can be used to recognize medicinal plants and their medicinal value, this can be used as an alternative strategy to save plants from being endangered. And can provide as a social service to promote our indigenous medicines. The accuracy of this application can also be further improved by training the network from more data and defining network by different parameters.

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A mechanism to aware unfavorable weight limit on backbone - A Smart back-pack

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Abstract

Spinal pain is one of the biggest issues among school children all over the world. The cause for this is carrying heavy pack backs which are not favorable to their body weight. Mainly Lumbar and thoracic part of the spine get effected by this heavy backpacks which leads to difficulties in maintain the normal posture, continues back pain last for few weeks and restricting the range of some body motions. Hence this research was done to provide a mechanism to aware children whether they carry favorable weight that suit for their health. In order to do this, weight of the back pack was measured by weight sensor and displayed in a digital display. If the weight of the back pack is not favorable to ones the body weight, the system gives a warning. This warning helps to avoid from carrying heavy weight which is not suitable to one's health. Using this mechanism, grade 7 to 9 school students in Kandy area were tested with their back-packs. From the taken results it could be found that many students used to carry unfavorable weights on their backs. Hence this mechanism can be suggested as a solution to aware student to consider about their health to avoid from spine related pains occurs due to heavy back-packs.

Author keywords

Spinal pain, Back-pack, unfavorable weight, health, weight senor

Introduction

Low back pain is an issue that most people ignore without understanding its role in one's life. According to a research done in Colombo, Srilanka in the first term of grade 6 & 7 students it has found that there are many major health hazard related to the vertebrate and the lung functions. [3]The reason behind this issue is the thickness of the books. Though the government has taken some actions to reduce the thickness by dividing big books to parts, still the problem remains same. Doctors have found out that even more than 10% of the body weight is not good to the musculoskeletal system of school student.

In a research done in New York also they have found that "heavy back pack" is a major problem among school children. Hence the American Academy of Pediatrics recommends that a child's backpack weigh no more than 10 to 20 percent of a child's weight. There consumer reports recommends keeping the weight closer to 10 percent of a child's weight. But one Texas study found that most parents don't check the weight of their child's backpack. [2]

By considering these situations, it is clear that this is a major issue over the whole world, though the needed party are not considering this. But if there is a system or a way that students, their-self can get awareness about the favorable weight that they can carry out, it would be a good social service to provide healthy generation in the future.

Hence the aim of this research is to design a setup which can solve above mentioned issues and to aware students about the favorability of the backpack weight that they have to carry.

Methodology

Once the items are filled in to the back pack, weight of the back pack is measured by a "weight sensor" and displayed. And weigh of the student has to be input to the system using the attached keypad. If the weight of the back pack is not favorable to one's body weight, the system gives a warning. This warning helps to avoid from carrying heavy weight which is not suitable to one's health. The designed system for this, can be given as follows.
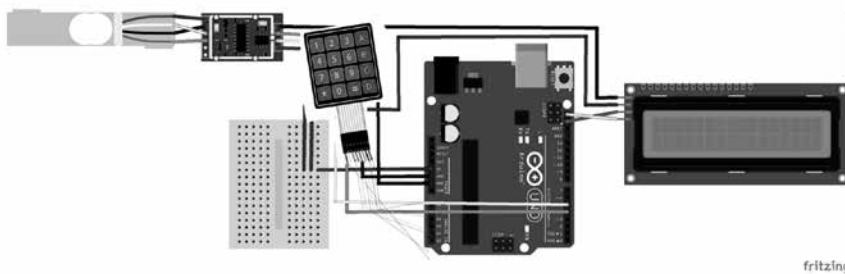
Figure 1 Circuit

The above image shows how the completed circuit has been configured in order do this system. There are some specific steps have been followed to set up this apparatus. And some items are needed to be congigured as mentioned below.

The HX 711 is a 24-bit analog-to-digital converter that has perfect for weight-sized applications. Fortunately, there are many breakout boards for the HX711. Therefore, it is very easy to use in combination with the so-called load cell. Load cells are transducers that convert pressure or force into electrical signals. Since the electrical signal is usually only a few millivolts, it must be amplified. That has where the HX711 breakout board comes in. It can amplify a weak signal to a few volts so that it can read the signal with the help of an Arduino Uno.

Load cell has been used here to measure the weight of the back-pack items. This load cell was connected to the HX711 Module circuit. Because HX711 module is the bridge sensor digital interface, this used to measure the weight and HX711 is a precision 24-bit analog-to-digital converter, designed for evaluating scales and industrial control applications to interface directly with a bridge sensor. This HX711 circuit was connected to the UNO Arduino circuit as follows the wires connected according to the HX711 circuit. Arduino circuit is an open-source microcontroller board based and this is easy to use for the beginners. And the LCD 16*2 display has been connected to the UNO Arduino to display the weight and numbers typed.
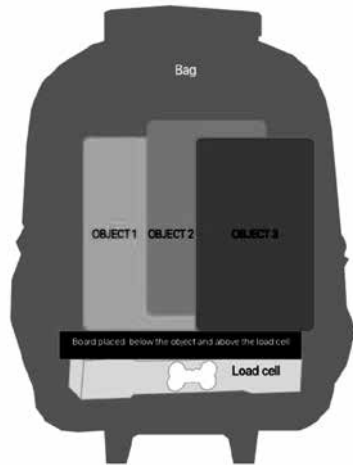
Figure 2 Proposed backpack design

Load cell was placed under a board and top of the load cell a board has been kept because to hold the objects and give the value of the back-pack object correctly. And the other HX711 circuit and UNO Arduino fixed inside of the backpack without visible. The display was fixed on the front of the back-pack and the key-pad was fixed down after the display fixed.

How the system is wired
First, the load cell is attached to the HX711 module. There are four wires in the load cell that must be connected to the first four pins of the HX711 module: red wire to E +, black wire to E, white wire to A +, and green wire to A +. The remaining pins B- and B + can be used to connect the second load cell to the HX711 module. Next, the HX711 module is paired with the Arduino Uno. The GND pin of the module must be connected to the Arduino's GND pin. The DT and SCK must be connected to the digital pins of the Arduino. , The DT is connected to the digital pin # 4 and the SCK is connected to the digital pin # 5. The remaining pin must be connected to the 5V pin of the VCC Arduino. Since the LCM1602 module also requires a 5V pin connection, a breadboard is used to divide the Arduino's 5V signal. As a last step, the SDA and SCL pins of the LCM1602 module must be connected to the corresponding SDA and SCL pins of the Arduino Uno. Also, the GNT pin must be connected to one of Arduino's GNT pins, and the VCC pin must be connected to the 5V signal of the breadboard.

How the program works
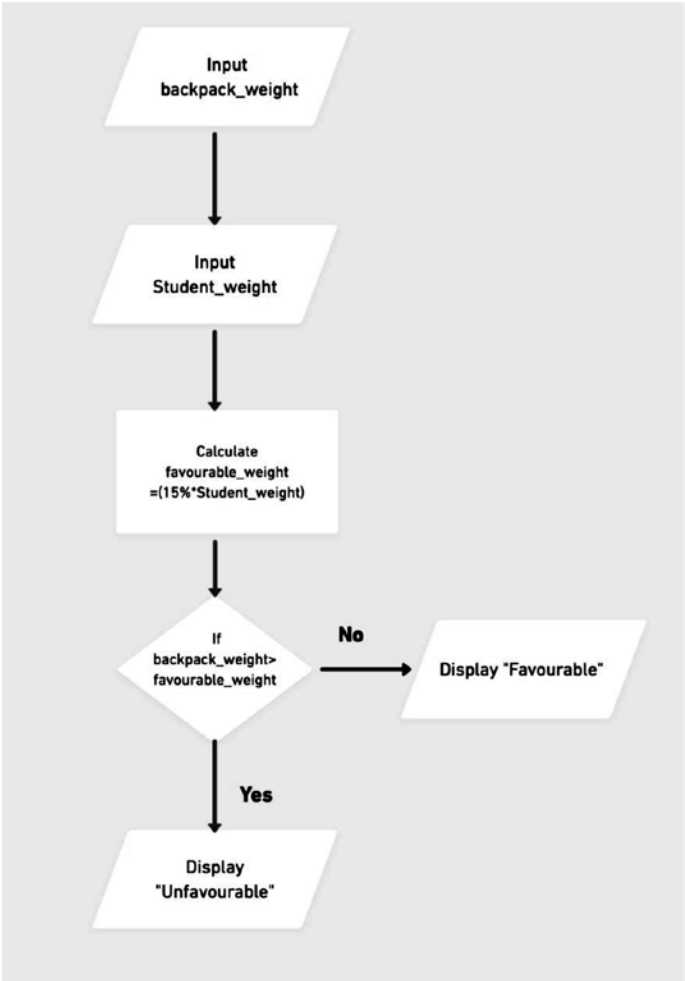
Experimental

Student weight(Kg)	Favorable Weight(Kg)	Backpack weight(Kg)	Expected Result	Actual result	Status
35	5.25	08	Unfavorable	Unfavorable	success
30	4.5	7.5	Unfavorable	Unfavorable	Success
45	6.75	05	Favorable	Favorable	success
32	4.8	07	Unfavorable	Unfavorable	success
40	6	6.5	Unfavorable	Unfavorable	success

The above table shows how it was tested to check whether it's working properly or not. Here the template of the test plan has been produced in order to convey the test results clearly. In order to carry out this testing 100 students (50 boys and 50 girls) in Kandy, Gampola area were taken with their body weights and their backpack weights. Then each of their "back pack weight favorability" was calculated manually and checked whether the developed system also giving the same results. And according to the 100 such test cases it could get 100% success which means that the system is giving proper output for each situations. And the saddest thing that could notice was that 67% of students carry unfavorable weights in their backs. Only 33% of students carry favorable weights.

Result of the backpack weight
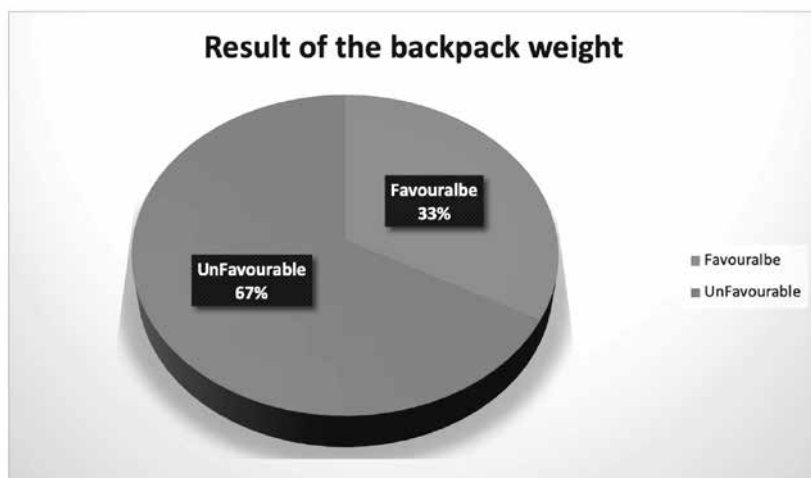
Conclusion
According to the testing and the taken feedback it can conclude that this system can be used to aware students about weight of their back packs and check the favorability of the backpack weight. And in the future this system can be trained with suitable dataset and will be able to function to predict diseases that could be get due to un- healthy weight conditions.

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Study of face recognition algorithms to conclude on the optimal algorithms that is featured by artificial intelligence

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Abstract

A Face recognition technology is a most important approach in our day-to-day life. It is mostly used to identified a human being and provide a security in many aspects of life. The human face is a complicated multidimensional model and it needs a sturdy recognition technique to recognize a human face. The face recognition accuracy depends on two procedures which are human face detection and a feature extraction method. Many of face recognition and feature extraction techniques are used to recognize the face but it needs more enhancement to get optimum outcome. There are so many algorithms, which are available for face recognition were discussed in this paper.

This paper has presented a comparison of different type of face recognition APIs like Face ++, Google cloud vision and IBM Watson Visual Recognition . These algorithms were evaluated using the data set called ORL databases (AT&T). In this data set, files are in PGM format, and can conveniently be viewed on UNIX (TM) systems using the 'xv' program. The size of each image is 92x112 pixels, with 256 grey levels per pixel. The images are organized in 40 directories (one for each subject).

The same data set is fed into the Face ++, Google cloud vision and IBM Watson Visual Recognition algorithms. These three type of algorithms were run separately and found what type of optimizer, what amount of loss the algorithms got and what is the metrics/accuracy the algorithms got. After that, optimizer, loss, metrics/accuracy tests results were compared and found that Face ++ algorithms has a higher accuracy and space complexity comparing with other algorithms. So Face ++ is the most suitable and the best algorithms for face recognition.

Introduction

Facial recognition is a technique used by computer algorithms to identify or verify a person or an object through images. The objective of facial recognition techniques is to get different features of human faces from images or different people (Lone, Zakariya, & Ali, 2011). There are many algorithms use for facial recognition. This study aims to analyze various face recognition algorithms. This paper will finally allow us to find which algorithms is the best for face recognition.

Experimental

There are large numbers of face database collected and accessible publicly for research purpose. The famous among them include ORL Database, Yale, FERET, AR, MIT, CMU PIE, Indian face database and many others. After considerable effort of searching for dataset, a very good dataset was found from Kaggle.com, named as "ORL Database of Faces (AT&T)".

In this work, the training and testing sample were taken from Oral Faces Database, formerly ORL (Olivetti Research Laboratory) Database of Faces' (AT & T). The database contains a set of face images taken between April 1992 and April 1994 at the Olivetti Research Laboratory in Cambridge, UK. The database was used in the context of a face recognition project carried out in partnership with the Speech, Vision, and Robotics Group of Cambridge University Engineering Department. There are 10 different images of each of 40 distinct subjects. For each person, the images were taken at different times, varying the lighting slightly, facial expressions (open/closed eyes, smiling/not smiling) and facial details (glasses/no glasses).

All the images were taken against a dark homogeneous background with the subjects are in an upright, frontal position (with tolerance for some side movement). All images are store in ORL in portable gray map (PGM) format with the size of each image is 92x112 pixels, with 256 grey levels per pixel. Figure 1 shows the sample of ORL face database for 7 persons. The images are organised in 40 directories (one for each subject), which have names of the form sX, where X indicates the subject number (between 1 and 40). In each of these directories, there are ten different images of that subject, which have names of the form Y.pgm, where Y is the image number for that subject (between 1 and 10). Below figure shows the ATT face data set.

Following algorithms has been selected for this research.
• Face plus plus
• Google cloud vision
• IBM Watson Visual Recognition

To develop face base application open source Deep Learning framework tenser flow is used. And the codes are run in google colab Notebooks. Colaboratory is a Google research project created to help disseminate machine learning education and research. It's a Jupyter notebook environment that requires no setup to use and runs entirely in the cloud. Following tasks were performed to classify and collect data for the research.

Next the training and testing was done with the data set with the algorithms selected. Here three algorithms are using different type of optimization functions.

algorithms	optimizer	function
Face ++	adam	ReLU
Google vision	Momentum	Tanh
IBM watson	RMSProp	Sigmoid

Table 1- Summary of algorithms, optimizers and Activation Functions

The testing was done to see the algorithm accuracy .The test were executed using several sets of images from the AT & T (formerly ORL) face database.

Result and Findings
According to the research carried out, accuracy results for each selected algorithm on the selected dataset during the testing process.

face ++	89.99%
vision	80.00%
IBM	85.00%

Table 2- Accuracy test result

Face ++ algorithm
Accuracy for 10 epochs

epoch	start	end
1	0.00%	5.28%
2	0.28%	15.56%
3	0.28%	31.67%
4	0.83%	61.11%
5	1.39%	70.83%
6	1.39%	85.00%
7	1.39%	91.67%
8	1.39%	96.94%
9	1.39%	97.50%
10	1.39%	98.61%

Table 3- Accuracy for 10 epochs for face++ algorithm
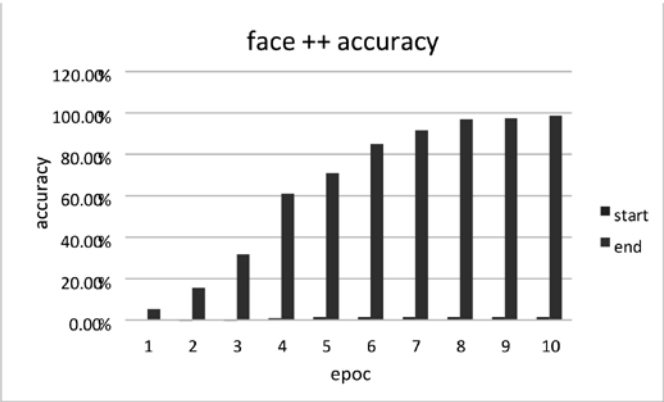
Figure 1-Accuracy for 10 epochs for face++ algorithm

Loss amount

epoch	loss
1	5657584
2	1436632
3	500305.7
4	174407.8
5	951119.3
6	39673.05
7	19872.13
8	7202.41
9	4383.35
10	1626.74

Table 4 - Loss amount
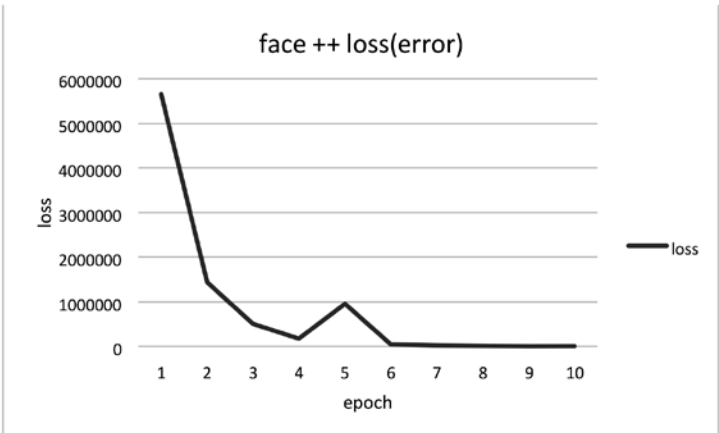
Figure 2- Face ++ loss

Vision algorithm

Accuracy for 10 epoch

epoch	start	end
1	0.56%	8.86%
2	1.11%	26.39%
3	0.83%	49.17%
4	1.39%	69.17%
5	1.39%	82.78%
6	1.39%	91.11%
7	1.39%	97.22%
8	1.39%	98.33%
9	1.39%	99.72%
10	1.39%	100.00%

Table 5- Accuracy for 10 epoch for vision algorithm
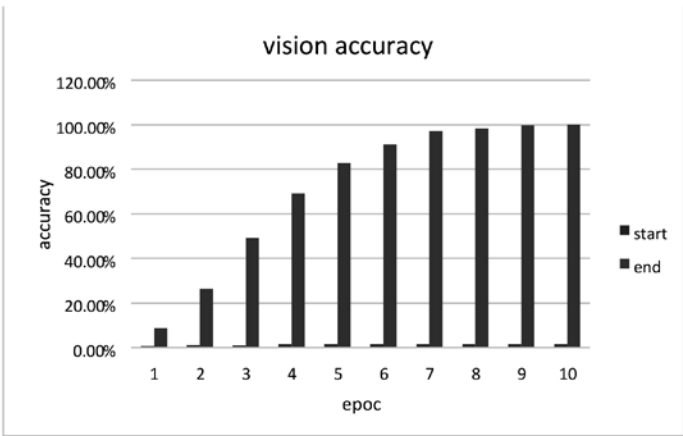
Figure 3- Accuracy for 10 epoch for vision algorithm

Loss amount

epoch	loss
1	4280951
2	990892.3
3	304991.3
4	107927.9
5	45003.79
6	14725.01
7	5602.45
8	4669.92
9	467.41
10	0

Table 6- Loss amount for vision algorithm
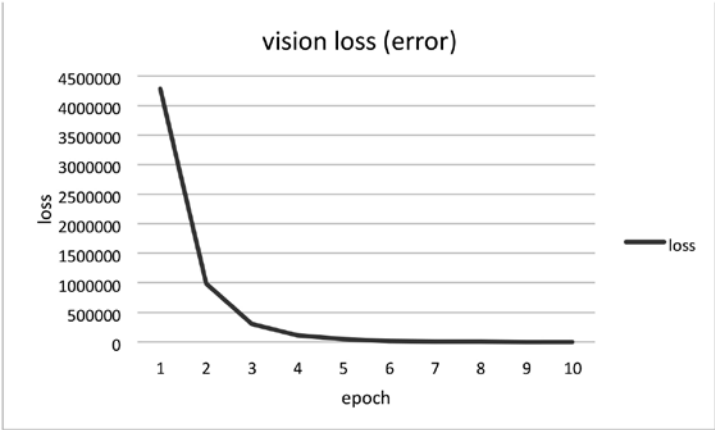
Figure 4- Loss amount for vision algorithm

IBM Algorithm

Accuracy for 10 epoch

epoch	start	end
1	0.00%	6.11%
2	0.28%	25.56%
3	0.28%	43.89%
4	1.39%	72.50%
5	1.11%	86.11%
6	1.11%	93.89%
7	1.11%	96.67%
8	1.39%	98.86%
9	1.39%	98.06%
10	1.39%	98.33%

Table 7- Accuracy for 10 epoch for ibm algorithm
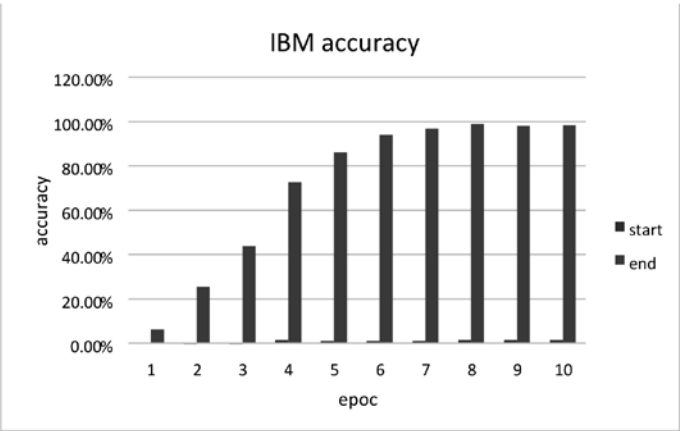
Figure 5- Accuracy for 10 epoch for ibm algorithm

Loss amount

epoch	loss
1	3737073
2	8806861
3	304041.2
4	87647.6
5	37362.43
6	8398.64
7	780.8873
8	2764.56
9	2830.96
10	0

Table 8- Loss amount for ibm algorithm
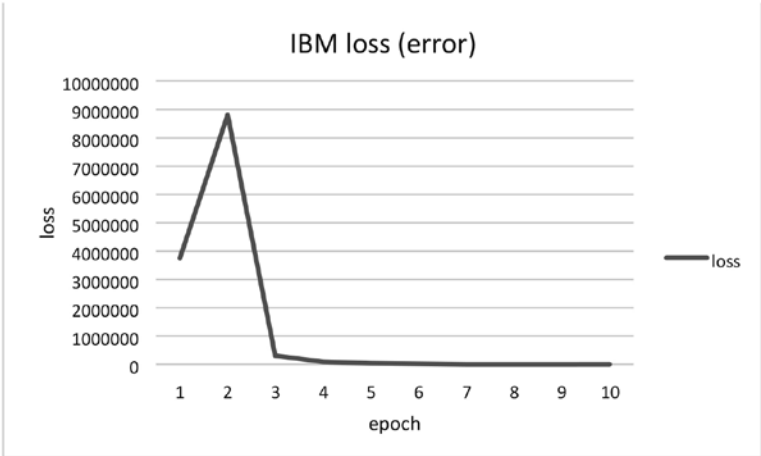
Figure 6 - Loss amount for ibm algorithm

According to the results the accuracy for the algorithms are showing below chart.
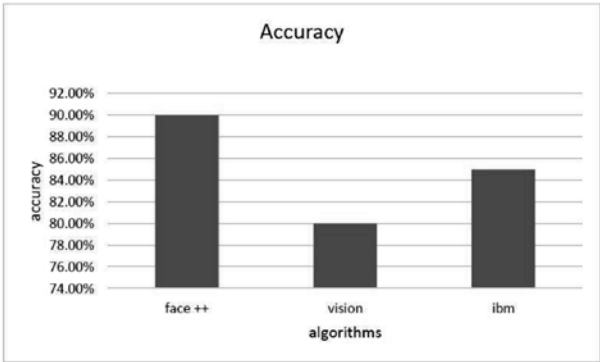
Figure 21 - Author's image of accuracy result for selected algorithms

The results of our accuracy evaluation using ATT datasets for three popular facial recognition algorithms. Such as Face++, IBM watson and google vision. By considering the results, the face++ is got 89.99% accuracy in the testing process. And google vision is got 80% and IBM got 85% accuracy. This highlight Face++ accuracy is quite high, above 90 percent comparing with others. However, this was evaluated by using a high-quality dataset of images.
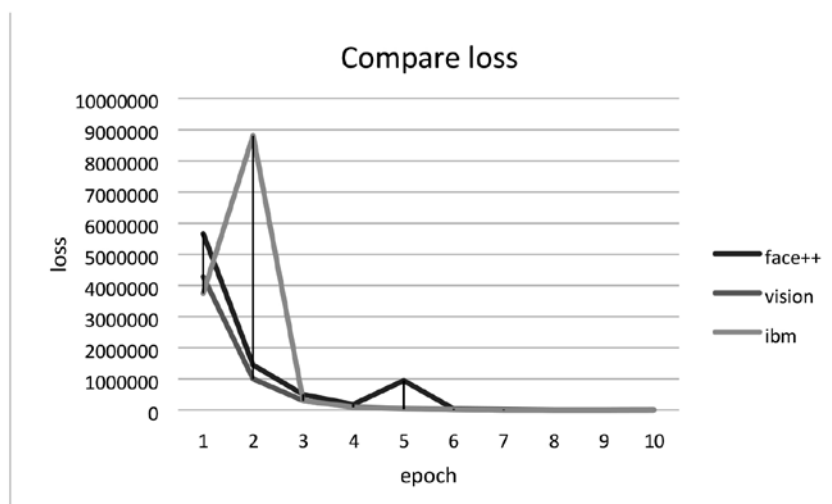
Figure 22 - Author's image of loss compare chart

Above graph, show the loss amount of each algorithms. Here face ++ is got less loss amount with comparing with other algorithms. Loss amount is based with the activation function. Face ++ using relu activation function. Its better than other activation functions. By considering all the algorithms and the given values, this study concludes that face++ is the best among these algorithms for face recognition. Because the face++ algorithm is using adam optimizer and a Relu activation function.

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Study of how deforestation can be identified through artificially intelligent audio finger printing technique

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Abstract

Sri Lanka is facing a very big threat which is related to environment and it is called as illegal deforestation. In order to fight with this problem this research suggests that artificial intelligence can be used to detect and monitor illegal deforestation by detecting the sounds of the tools used for deforestation. In order to implement artificial intelligence to this study classification algorithm based on audio fingerprinting technique was used. The study has taken already pre build recorded audio data set and has built an artificial intelligence model in tensorflow and keras. The research has taken 15000 sample recordings and have divided the dataset into 60 and 40 percentage. Because the study has used 9000 data set to train the artificial intelligent model and remaining 6000 data were used to test the intelligent model with Google tensorflow. The final output of the intelligent model came with 88+% accuracy. According to the outcome of the study it is conclusive b the use of this intelligent model to find the sounds of tools which are used in deforestation and it is also possible to stop or give a solution for the illegal deforestation.

An audio fingerprint is a content-based compact signature that summarizes an audio recording. Audio fingerprinting has attracted a lot of attention for its audio monitoring capabilities. Audio fingerprinting or content-based identification (CBID) technologies extract acoustic relevant characteristics of a piece of audio content and store them in a database. When presented with an unidentified piece of audio content, characteristics of that piece are calculated and matched against those stored in the database. Using fingerprints and efficient matching algorithms, distorted versions of a single recording can be identified as the same music tittle. The main aim of audio fingerprinting is to determine the digital "summary" of an audio. There are several real time examples for audio fingerprint application which is used in mobile phones and in those application Shazam and Sound Hound are some popular music recognition application that is used in mobile phones. The main purpose of doing this research is to know about how audio fingerprint can be use and implement for particular task. By doing this study it is finding a way to stop deforestation in Sri Lanka is the main purpose of the project. The main case that nature faced is deforestation so in this study I am going explain how an audio fingerprint can be implement through an example (which is explain in the abstraction part) and how use full this to stop the deforestation in Sri Lanka.

There are many datasets for speech recognition and music classification, but not a lot for random sound classification. Google AudioSet dataset was used for tis study, It is based on labeled YouTube video segments and can be downloaded in two formats:CSV files describing, for each segment, the YouTube video ID, start time, end time, and one or more labels.

Extracted audio features that were stored as TensorFlow Record files. These features were compatible with YouTube-8M models. Also this solution offers the TensorFlow VGGish model as feature extractor.

The library was modified to pass the number of classes as parameter.YouTube-8M can work with data of two types: aggregated features and frame features. Google AudioSet can provide data as features as noted before.

A PC with one NVIDIA GTX 970 4GB was used to run the models in tensorflow.

1–2 hours of training

Google AudioSet was split into three parts: balanced train, unbalanced train, and evaluation.

Balanced Train

The training command looks like:
For LstmModel was changed the base learning rate to 0.001 as the documentation suggested. Also default value of lstm_ was changed the cells to 256 because of the RAM capacity available.
Training results:
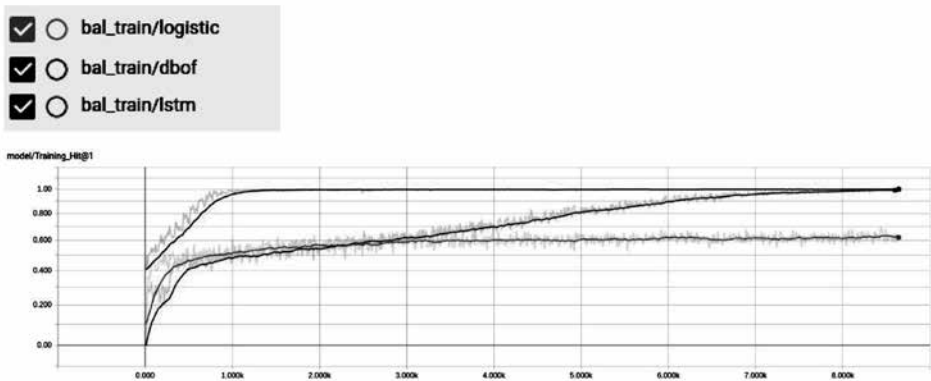
Model nameTraining timeTraining last step hitEvaluation average hitLogistic14m 3s0.58590.5560Dbof31m 46s1.0000.5220Lstm1h 45m 53s0.98830.4581

Unbalanced Train
Let's try the unbalanced train dataset. It has a lot more samples, so the number of training epochs was changed to 10 (should change to 5 at least, because it took significant time to train).
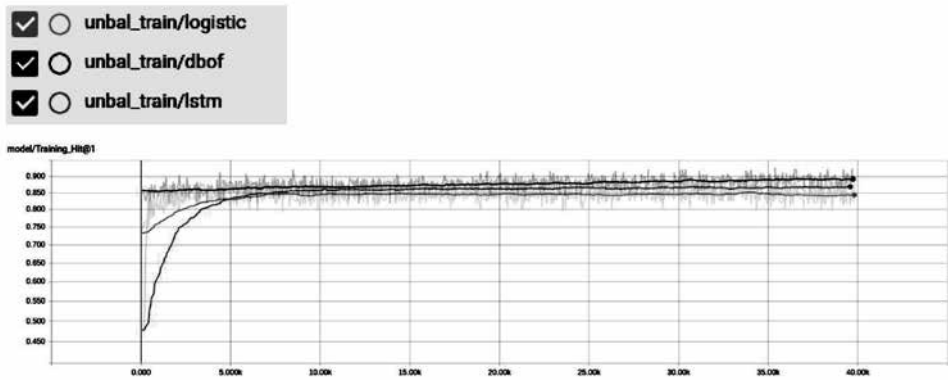
Model nameTraining timeTraining last step hitEvaluation average hitLogistic2h 4m 14s0.87500.5125Dbof4h 39m 29s0.88480.5605Lstm9h 42m 52s0.86910.5396

PyAudio was used to capture an audio from mic, It provides a simple interface and can work on most platforms. TensorFlow VGGish model was used as the feature extractor. "Dog bark" example from the UrbanSound dataset was used for visualization.
Resample audio to 16 kHz mono.
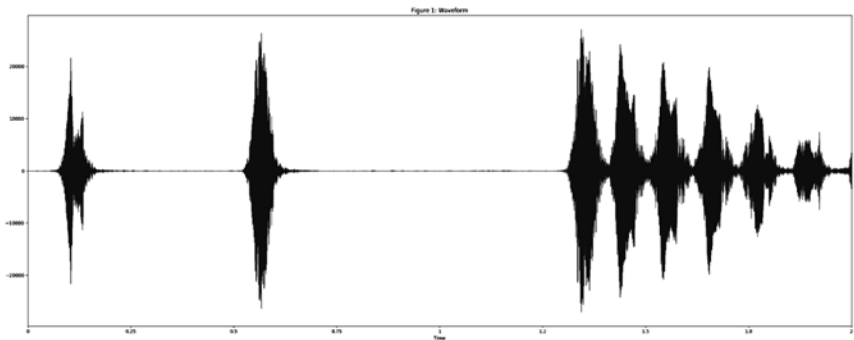
Compute spectrogram using magnitudes of the Short-Time Fourier Transform with a window size of 25 ms, a window hop of 10 ms, and a periodic Hann window.

Figure 2: Spectrogram
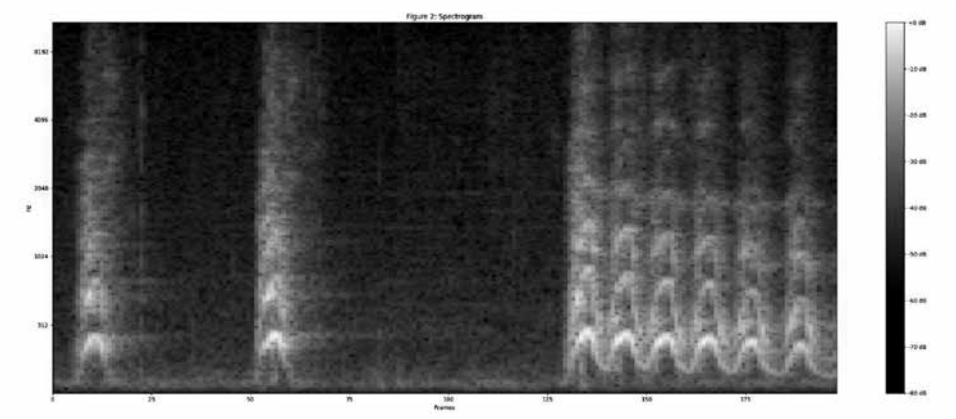
Compute mel spectrogram by mapping the spectrogram to 64 mel bins.

Figure 3: Mel spectrogram
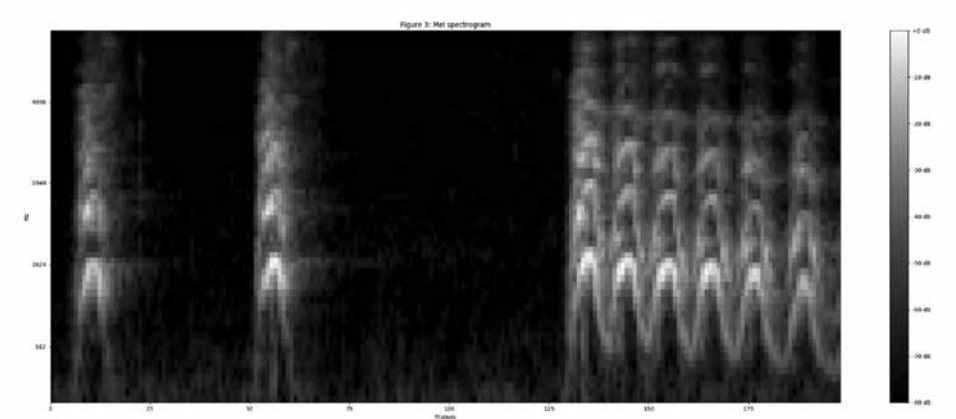
Compute stabilized log mel spectrogram by applying log(mel-spectrum + 0.01) where an offset is used to avoid taking a logarithm of zero.

Figure 4: Stabilized log mel spectrogram
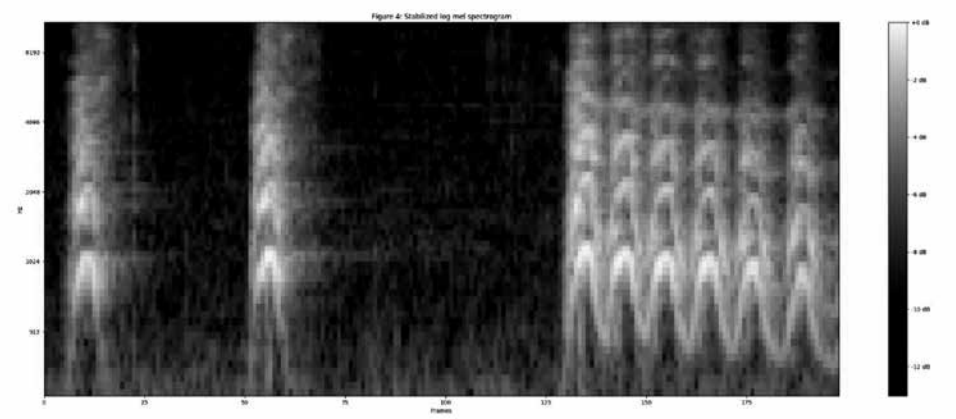
These features were then framed into non-overlapping examples of 0.96 seconds, where each example covers 64 mel bands and 96 frames of 10 ms each.

These examples are then fed into the VGGish model to extract embedding's.

Finally the YouTube-8M interface was used as an example, but was modified to remove the serialization/deserialization step.

Then the project was run in three steps

1. Process Prerecorded Audio File

Terminal output

Speech: 0.75, Music: 0.12, Inside, large room or hall: 0.03

The result depends on the input file. These values are the predictions that the neural network has made. A higher value means a higher chance of the input file belonging to that class.

2. Capture and Process Data from Mic

starts the process that will capture data from system mic infinitely. It will feed data to the classification interface every 5–7 seconds (by default).

3. Web Interface

2017-11-02 17:29:38	Music: 0.26
2017-11-02 17:29:43	Music: 0.56, Wind chime: 0.20, Speech: 0.13, Chime: 0.12
2017-11-02 17:29:48	Music: 0.51, Wind chime: 0.10
2017-11-02 17:29:53	Music: 0.68, Spray: 0.15, Grunge: 0.12, Speech: 0.11
2017-11-02 17:29:58	Music: 0.56, Speech: 0.13
2017-11-02 17:30:03	Music: 0.56, Speech: 0.15, Snort: 0.13, Crunch: 0.10
2017-11-02 17:30:08	Speech: 0.28, Music: 0.23, Fly, housefly: 0.23, Bee, wasp, etc.: 0.14
2017-11-02 17:30:13	Speech: 0.33, Music: 0.24, Fly, housefly: 0.18, Bee, wasp, etc.: 0.11
2017-11-02 17:30:18	Fly, housefly: 0.28, Speech: 0.26, Music: 0.19, Bee, wasp, etc.: 0.17
2017-11-02 17:30:23	Speech: 0.21, Music: 0.15

Conclusion

Using this model now the input dataset can be changed from Google AudioSet to a dataset containing audio clips of all the power tools and mechanical tools that are used to cut trees and is the system matches with the dataset or library it will detect that a tree s c, by cobinig this AI model with IOT sensors deployed in forests can detect the deforestation as it happens.

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Study of how deforestation can be identified through Artificially Intelligent image processing technique

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Abstract

Deforestation in Sri Lanka has appeared to increase rapidly. According to Sheain Fernandopulle (2017), Sri Lanka has lost about 27,000 hectares of forest per year which is around 1.4% of the forest. This information facilitates to understand that deforestation has a major impact on global warming and bio-diversity. Given evidence that this will have direct impact on the living creatures, including humans, it is important to establish whether or not deforestation can be identified. This study aims in providing a solution to identify deforestation through aerial images by means of artificially intelligent method that undergoes several manipulations to the image and finds out if the image represents any sort of deforestation. This research aims to produce an automated method of finding out areas of deforestration. This is achieved by using an Artificial Intelligent method which will be a supervised deep learning convolutional neural network that is based on Mathlab. The algorithm will extract the area of deforestation from a given image through various techniques which involve feature extraction and image processing. Then a dataset is being fed into the system to train the AI system to find different deforestation areas in various images. The outcome of this investigation exhibits the deforestation areas that can be reduced by means of identifying them before hand, hence reducing deforestation in Sri Lanka.

The research will produce a method of identifying deforestation through an artificially intelligent technique. The system will be fed with an image and it will be able to identify any signs of early deforestation. This was take 4 months to complete. This research will only provide the solution while an aerial transportation device will be required to capture aerial images of the land areas, which is not within the scope of this research.

The dataset using for this project consists of a set of images in .jpg format. Each image is essentially a 'chip' taken from a 'scene' from Planet's from full-frame analytic scene product. The particular scene we are using for this project covers an area of 24,408 hectares and spans the Amazon basin. Each chip in our dataset measures 256 x 256 pixels and covers 221 hectares.

Kaggle has provided two major sets of images, the first set is a training set consisting of 40,479 images and the second set is a testing set of 40,689 images. The training set is labelled by a combination of satellite image analysts and crowdsourcing efforts, the labels are provided via a .csv file. The testing set however, is unlabelled. The purpose of the testing set is for competition participants to upload the predicted labels for evaluation.

For the purposes of this project will focus on the labelled set of images (training set) provided by Kaggle. This means that this dataset was further divide the labelled set of images into training, validation and testing sets. testing set was be 20% of the total amount of images while validation set was be 20% of the training set. In

summary 25,906 training images, 6477 validation images and 8096 testing images. The unlabelled set of images from Kaggle was be used for the batch processing part of our solution.

The methodology for identifying the area of deforestation can be divided into three major steps:
1. Pre-processing
2. Image processing
3. Post processing

Figure 1 shows the complete architecture on the steps of how this study was conducted in order to obtain the output of finding the area of deforestation in a given aerial image. The below section will describe each step in detail separately.
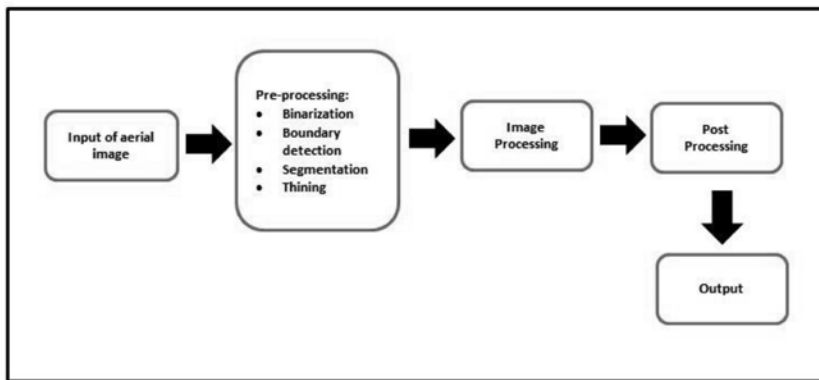
Figure 1 – Authors' image of Acquisition of deforestation area in image using image-processing technique

Pre-processing
Images that have been captured are from different sources, some may be through a high definition camera and some may be through satellite. These images will have errors related to the geometry and brightness values of the pixels. These errors need to be corrected using appropriate mathematical models that can be a definite model or statistical model (B. Chitradevi and P.Srimathi, 2014). In this phase, the image is also enhanced according the requirement through a collection of techniques that are mostly used to improve the appearance of the image, or convert the image to better state that will be much suitable for machine interpretation and hence, resulting in increased recognition accuracy of the deforestation area. This phase involves different actions that are performed to enhance the image and are listed below.
1. Binarization
2. Boundary Detection
3. Segmentation
4. Thinning

Data Preprocessing
The image below shows the output of our data frame after importing the relevant file paths and tags from the .csv file provided by Kaggle.

id	filepath	image_name	tags
0	../data/train/train-jpg/train_0.jpg	train_0	haze primary
1	../data/train/train-jpg/train_1.jpg	train_1	agriculture clear primary water
2	../data/train/train-jpg/train_2.jpg	train_2	clear primary
3	../data/train/train-jpg/train_3.jpg	train_3	clear primary
4	../data/train/train-jpg/train_4.jpg	train_4	agriculture clear habitation primary road

Author's image of data frame
The second step is to ensure the 'tags' or labels are one-hot encoded in numpy array format (eg. [0 0 1 0 1 1 0]). We assign the one-hot encoded numpy array to a variable called targets. The training files and targets will then be split into the appropriate training, validation and testing sets.

```
total_classes = ['agriculture', 'bare_ground', 'blooming', 'blow_down', 'clear',
    'conventional_mine', 'cultivation', 'habitation', 'haze', 'partly_cloudy',
    'primary', 'road', 'selective_logging', 'slash_burn', 'water', 'cloudy', 'artisinal_mine']

def constructLabelVector(dataFrame):
    result_vector = []
    for index, row in dataFrame.iterrows():
        pos = findPositionsWithinClasses(row['tags'])
        vector = createVector(pos)
        result_vector.append(vector)

    return result_vector

def findPositionsWithinClasses(string):
    positions = []
    list_strings = string.split()
    for word in list_strings:
        index = total_classes.index(word)
        positions.append(index)

    return positions

def createVector(pos):
    vector = []
    for i in range(len(total_classes)):
        if i in pos:
            vector.append(1)
        else:
            vector.append(0)

    return vector

targets = np.array(constructLabelVector(df))

print('There are %d labels in total.' % len(targets))
```

Author's image of code

The final step in data preprocessing is to turn the train_files, valid_files and test_files into tensors as shown in the image below. Once that is done, the appropriate inputs and targets for our CNNs will be available.

```
from PIL import ImageFile
ImageFile.LOAD_TRUNCATED_IMAGES = True

train_tensors = paths_to_tensor(train_files).astype('float32')/255
valid_tensors = paths_to_tensor(valid_files).astype('float32')/255
test_tensors = paths_to_tensor(test_files).astype('float32')/255
```
```
100%|██████████| 25906/25906 [00:54<00:00, 473.59it/s]
100%|██████████|  6477/6477  [00:12<00:00, 537.33it/s]
100%|██████████|  8096/8096  [00:15<00:00, 536.57it/s]
```

Author's image of appropriate input and targets

Implementation

The first CNN that is build will be known as the original model, it will consist of 3 convolutional layers with an increasing number of filters, a kernel size of 3 with relu activation functions. Wedged in between the convolutional layers will be max pooling layers. The output with be a Dense fully connected layer with a sigmoid activation function.

```
Layer (type)                     Output Shape              Param #
=================================================================
conv2d_1 (Conv2D)                (None, 254, 254, 20)      560
_____
max_pooling2d_1 (MaxPooling2     (None, 127, 127, 20)      0
_____
conv2d_2 (Conv2D)                (None, 125, 125, 40)      7240
_____
max_pooling2d_2 (MaxPooling2     (None, 62, 62, 40)        0
_____
conv2d_3 (Conv2D)                (None, 60, 60, 80)        28880
_____
max_pooling2d_3 (MaxPooling2     (None, 30, 30, 80)        0
_____
dropout_1 (Dropout)              (None, 30, 30, 80)        0
_____
flatten_1 (Flatten)              (None, 72000)             0
_____
dense_1 (Dense)                  (None, 17)                1224017
=================================================================
Total params: 1,260,697.0
Trainable params: 1,260,697.0
Non-trainable params: 0.0
_____
```

Author's image of the layers
The inputs that is used for training will be training and validation file and their respective targets. The training was done over 8 epochs. When compiling these two models a slower learning rate (1e ^ -4) will was used, but the SGD optimizer and binary cross entropy loss function will be kept

Result and Discussion

Model Evaluation and Validation in the implementation trained a total of four models - an original CNN model built from scratch, a ResNet50 model with a retrained top layer, another ResNet50 model with half the layers retrained and finally a Xception model with 19 layers retrained. Their respective predictions on the test set are used to calculate the precision, recall and F-2 score, which are summarized in the table below.

Table 1 – Table of training models

Model	Recall	Precision	F-2 Score
Original Model	0.72	0.79	0.73
ResNet50 Shallow	0.79	0.85	0.79
ResNet50 Deep	0.83	0.89	0.84
Xception	0.68	0.82	0.68

The best trained model is the ResNet50 Deep model (optimal model), this is the transfer learning model where half the layers are retrained with our own training data. The training time for 25 epochs was close to 8 hours. Overall, this model is robust with a F-2 score of 0.84. The weights from this model was saved in a separate .hdf5 file which was used as part of our solution in a web application and batch processing to a .csv file.

The optimal model manages to recall 83% of labels while labels predicted are close to 90% accuracy. As a rough estimate, this level of performance may be comparable to a crowdsourced human analyst. At this level of robustness, it is possible to build a software application which automatically processes image chips from Planet satellite, with a human in-the-loop to further validate and improve the model. Such a software application may alert governments and organizations to respond to deforestation events without the need for humans to slowly and painstakingly analyze a huge repository of images in a daily basis.
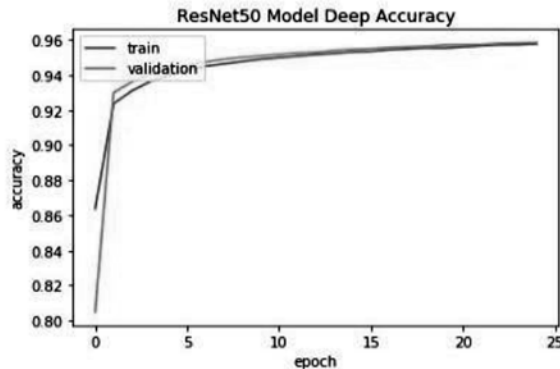
Figure 7- Author's image of ResNet50 model deep accuracy
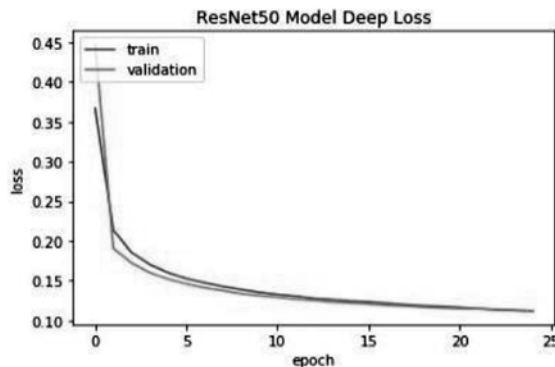
Figure 8 - Author's image of ResNet50 Model deep loss

Conclusion

Deforestation is one of the most serious environmental issues in Sri Lanka. The government of Sri Lanka and international environmental organisations have made several steps to address the problem over the years, establishing national parks, reserves and sanctuaries. But, these have been manual ways of finding deforestation. This study provides an automated way of identifying deforestation through satellite images. This research study is a hypothetical method of identifying deforestation, the affect has not been calculated as it has to be implemented and tested which is not within the scope of this research.

To implement, there is a long procedure of getting approvals from higher authorities and getting permissions to access the forests and national parks of Sri Lanka. But, there will be a great impact on detecting deforestations if this research is applied.

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Study on effectiveness of Business Intelligence tools in decision making process within Educational organization

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Abstract

BI (Business Intelligence) is a set of processes, architectures, and technologies that convert raw data into meaningful information that drives profitable business actions. Today Data and information is core to any organization and business process. In today's age of technology, information is power! The ability to gain timely and accurate insights into various aspects of the business, like sales volume, revenue & margin forecast, perfect order rates are of paramount importance for any organization since the data is just stored in spread sheets, the organizations fail to convert the raw data into meaningful information that drives profitable business actions and also it directly effects the organizations strategic, tactical and operational business decisions. This paper is study about the effectiveness of BI (Business Intelligence) tools within organization decision making process. Therefore, in order to understand the decision making requirements of HR, Marketing, Academic and Accounts department of BCAS Kandy Campus, a set of questioner distributed among above four departments and gathered the requirements of each departments. Based on the department requirements a prototype of BI tool implemented for period of 3 months. A survey was conducted among the departments in order to evaluate the effectiveness of implemented BI system. Based on survey evaluation results, it shows that 80% decision making process of each department is very effective with BI tool comparatively. Also it found the system was very effective, less time consuming and helps the decision making process easily and timely within the educational organization.

Author keywords
BI (Business intelligence), architectures, revenue

Introduction
With the massive development of Information technology, Business intelligence (BI) has driven technology to process for analyzing data and presenting actionable information to help the organizations to make informed business decisions. This implemented system is, one that gives a solution to organizations that are facing to take proper decision making. This concept was taken as a prototype idea but using this concept helps the organization in many ways. Specially this system mainly targeted on Educational organization. When a situation of finding a students' statistical information regarding average marks and student attendance. This system will help to find out the aggregate revenue generated per student. And also, this system helps the organization to find out the expenses In order to run the organization and Increase the profit of their business by improving operational efficiency in their business.

Even though there are other methodologies to solve this problem, still there is very huge demand and opportunities to solve these types of problems by using the Business

Intelligence technology.

Methodology
The main software tool used for this system is Microsoft Power BI. Initially a set of questioner distributed among HR, Marketing, Academic and Accounts department of BCAS Kandy Campus in order to find the requirements of each departments of the decision making process. Then collected each department requirements prototype BI system was implemented for each department separately. The implemented prototype of BI tool tested for a period of 3 months within the department to find the effectiveness of the prototype BI system. Finally In order to evaluate the decision making process effectiveness of implemented BI system a survey was conducted among the departments. From the conducted survey the effectiveness of the prototype BI system's results analyzed.

Results and Discussion
As per the conducted survey results, it has evident that with implemented BI system overall 80% of decision making process was effective during the prototype test period of 3 months within BCAS Kandy Campus departments. And also which lead benefit of the organization in many aspects, such as no need of unnecessary meeting with management which are very time consuming, no need to depend on fully staff's feedback and comments regarding to find the progress of the organization. It also conclude this system can be implemented throw-out all the educational institute for their decision making process. In order to find the effectiveness of the prototype system can be tested among other educational institution.

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Using Artificial Intelligence in Web development to increase Efficiency

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Abstract

The World Wide Web (WWW) or the Web has been recognized as a powerful new information exchange channel in recent years. Today, an ever☐increasing number of businesses have set up Web sites to publicize their products and services. However, careful planning and preparation is needed to achieve the intended purpose of this new information exchange channel. This paper is about a new research field called Using Artificial Intelligence in Web development to increase efficiency. This paper discusses some of the current trends and practices in AI. This paper proposes a comprehensive framework for effective commercial Web application development based on User Experience (UX) and User Interface (UI). For a Web page, both the functionality and usability of Web pages are thoroughly considered. The use of the framework should result in more efficiency in Web application development and how Artificial Intelligence can enhance this.

Keywords

Artificial Intelligence, UX, UI, User Interface, User Experience, E-Commerce, Automatic Tracking

Introduction

Web Development Artificial Intelligence can really create a surprising impact on the web experience that will enable quick business transformation. Think about surfing a website, and when you show interest in specific products, the Web interface automatically offers you some advertising opportunities. The AI can help to acquire and improve ideas based on user behavior.

To make these techniques much more imperative and delightful with the help of rising AI technology and they also provide scope in web development. AI is one of the advanced technology, which improves the user interface and user experiences to rises and growth of the businesses. Artificial intelligence plays a major role for the website and user, this through web further closer to the customers. This research paper mainly focus on UI & UX in web sites.
• UI (User Interface)
• UX (User Experience)

Methodology

A research method is a systematic plan for conducting research. Sociologists draw on a variety of both qualitative and quantitative research methods, including experiments, survey research, participant observation, and secondary data. Quantitative methods aim to classify features, count them, and create statistical models to test hypotheses and explain observations. Qualitative methods aim for a complete, detailed description of observations, including the context of events and circumstances.

Qualitative research method

• Interviews

Interviews enable face-to-face discussion with human subjects. If you are going to use interviews you will have to decide whether you will take notes (distracting), tape the interview (accurate but time consuming) rely on your memory (foolish) or write in their answers (can lead to closed questioning for time's sake). If you decide to interview, you will need to draw up an interview schedule of either questions, which can be closed, or open questions, or a mixture of these. Closed questions tend to be used for asking for and receiving answers about fixed facts such as name, numbers, and so on. They do not require speculation and they tend to produce short answers. With closed questions, you could even give your interviewees a small selection of possible answers from which to choose. If you decide to use interviews;

• Identify your sample.

• Draw up a set of questions that seem appropriate to what you need to find out.

• Do start with some basic closed questions (name etc.).

• Do not ask leading questions.

• Try them out with a colleague.

• Pilot them, and then refine the questions so that they are genuinely engaged with your research object.

• Contact your interviewees and ask permission, explain the interview and its use.

• Carry out interviews and keep notes/tape.

• Thematically analyze results and relate these findings to others from your other research methods.

Experimental

A survey had been conducted among selected number of students and lectures, who are mainly In IT field, at college students, and collage lectures, summarized results shows that majority them like the idea and appreciated, In the survey there are 3 websites given that already using AI and not using AI. And according to their opinion they can visit the website and browse along and see for them self which they can found difficult in UI (User interface) and UX (User experiences), the main reason behind this was the computer literacy among the selected group. The middle broker elimination part and direct communication between students and lectures were well appreciated.

So after getting a survey I add all the record to a excel sheet and predict the results. While adding the record to the excel sheet separately done to two categories, it means Using AI websites and Non AI using websites.
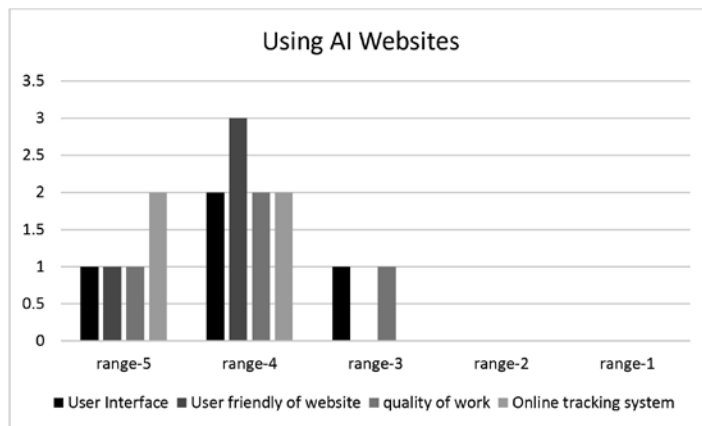
Figure 1

Figure 1 shows the result of Using AI websites. So I have given range for each question. So in that it shows the results. So in this results most of them of ranged up to (range-5). Because while using a AI system to a website, it looks better than Non AI using website. So it better to use a AI system for a website.
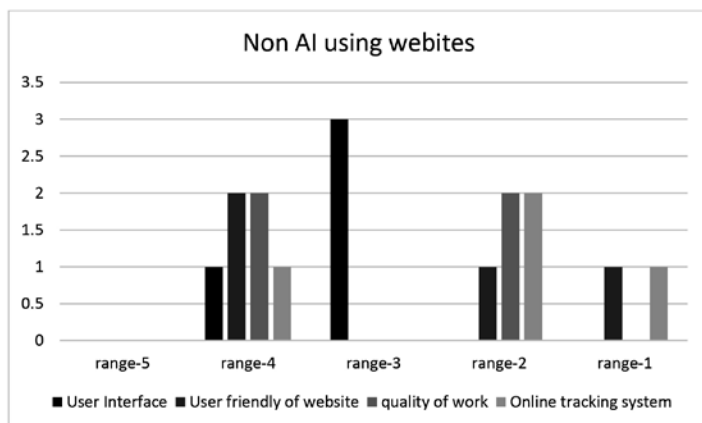
Figure 2

Figure 2 shows the results of Non AI using websites. According to the question they have ranged to each question. So in this results No one ranged up to (range-5). So it is better use a AI system for a website to make these website better.

Conclusion

AI can have a huge impact on the way we live our lives. From Enables hyper-customization to save more time Typical tasks, these new tools basically change the way we communicate With technology in our daily lives. As AI is normalized, industry leaders need to be aware of it The ways in which technology is implemented so that consumers are from all fronts Range can benefit. This means improving data storage and Swap the backend to create fluid User experience and User Interface. This means Ensures that the AI that is delivered to the public is calculated Systematic dependency that can be integrated into the instructions.

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Using Machine Learning techniques to predict fuel consumption of a vehicle

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Abstract

Buying and selling vehicle is one of a leading business in Sri Lanka. Therefore, when it comes to buy a vehicle the efficiency of fuel is the primary parameter for a buyer. So, when a buyer buys a vehicle, he/she used to ask the fuel consumption for that vehicle from the previous owner. Even if the previous owner says an amount that might not be so accurate. Therefore, to overcome the problem the author has come across an algorithm using Artificial Intelligence based predicting fuel consumption using Machine Learning techniques of a particular vehicle. There is similar research were done using machine learning techniques for trucks, aircrafts and so on. Statistically, there are more than 6000 data of vehicles. The author has divided those data into two sets. Out of that, 4000 data were to train the model and the remaining 2000 of the data was to test the model. Once the author trains the model and when the author tests the model the author found that the model was more than 88% accurate. Since, it has more than 88% accuracy using machine language techniques predicting fuel consumption in a vehicle it is define to implement the model for real world applications.

By conducting this research, it will invent a method to find a way to predict the fuel consumption for vehicles through artificial intelligence. The dataset will be fed to the system and that fed dataset will be trained and tested. Once it is trained and tested the system will be capable of predicting the vehicles fuel consumption. Finally, this research will provide solutions for finding fuel consumption for any vehicles.

Experimental

The data which is been used in this research is a dataset which was taken from the StatLib library which is maintained at Carnegie Mellon University. Since, the dataset is open-source the author has downloaded the dataset from the Kaggle. The dataset is provided through a .csv file. Even though this dataset is built for the cars in 1990's through developing this model using that dataset it can also predict the fuel consumption for the current vehicles. In the dataset there are 398 number of instance and the dataset have 9 attributes. The attribute information of the dataset is shown below.

According to the purpose of this project the dataset has been divided into sets. One set is to train the data and the other set is to test the data. The 80% of the data in the dataset is to train the model and the rest of the 20% data in the dataset to test the model. The reason to divide the dataset into two instead of training the entire dataset is because to check the accuracy of the model.

This research is implemented in colab. The colab is a platform which has the ability to run TensorFlow code. In order to implement this research, the TensorFlow code is been used to build the entire model. The below image shows that the entire library is been

installed in colab which is must in order to run the rest of the code.

Once the dataset is ready to use the dataset has divided into two sets. One set is use to train the mode and the other set is to test the model. The dataset uses to train the model has 80% percent of data and the rest of the 20% to test the model. That dataset which divided is shown below. the model has been created using artificial neural network. In order to build the model, the sequential model is being used with three layers added and using ReLu activation function. The first layer and the second layer have 64. The total parameters have passed through the model is 4,865 and all the passed parameters are trainable parameters also there are no any non-trainable parameters exist according to the summary of build model shown below.

```
model.summary()

Model: "sequential"
```

Layer (type)	Output Shape	Param #
dense (Dense)	(None, 64)	640
dense_1 (Dense)	(None, 64)	4160
dense_2 (Dense)	(None, 1)	65

```
Total params: 4,865
Trainable params: 4,865
Non-trainable params: 0
```

Once the model is built then, the next part is to train the built model. The author has given epoch as 1,000 It shows that the training of the model is done 1,000 times.

Once the implementation is done the next part is to testing the build model. Therefore, the testing is done in this section and also the result also has been showed.

Model Predictions vs Original Data
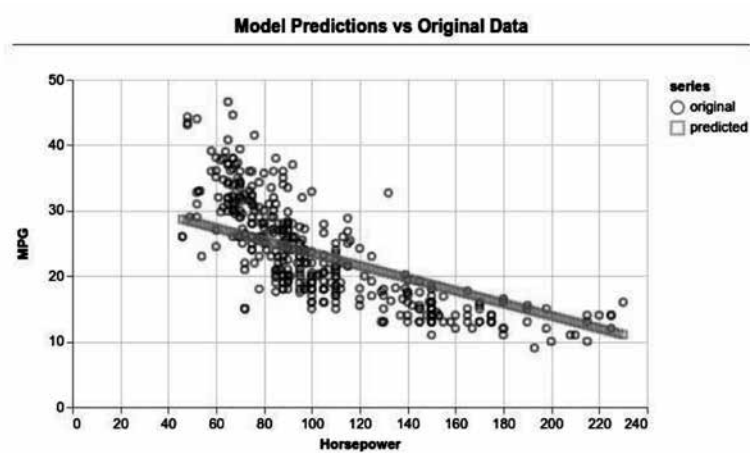
The above shown image shows the model prediction vs original data. According, to this project the predicting is known as testing. Therefore, the model predicts well through the linear regression which tries to fit a line to the trend present in input data.

The error which is been plotted while testing.
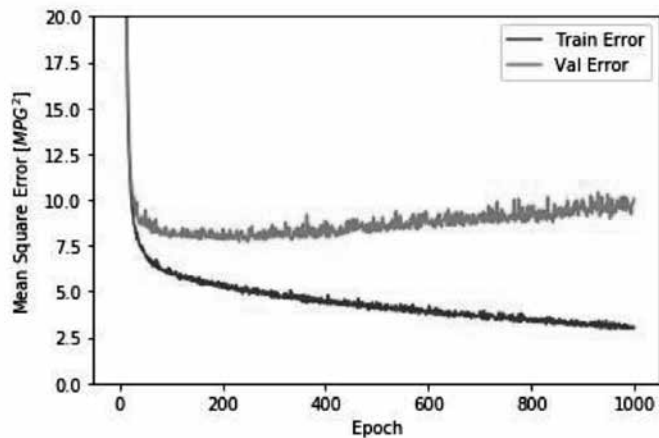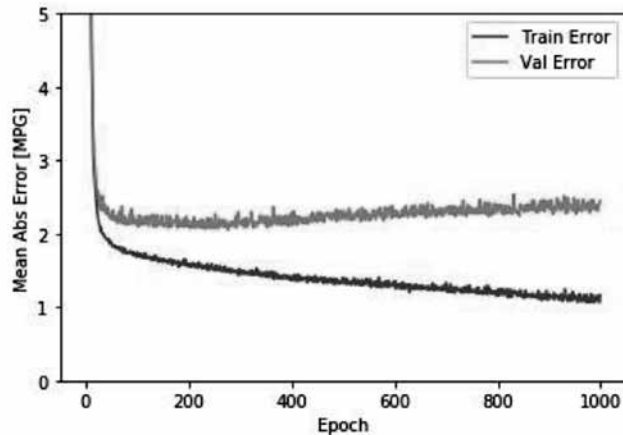
The above shown image is the error which shows the improvement or degradation in the validation error after about 100 epochs. In order to improve the model, it is been updated therefore, the model stop training automatically when the validation score doesn't improve. To build the model an EarlyStopping callback have been used so that tests a training condition for every epoch. If a set number of epochs elapses without showing improvement, then automatically stop the training.

The updated model's error is shown below.
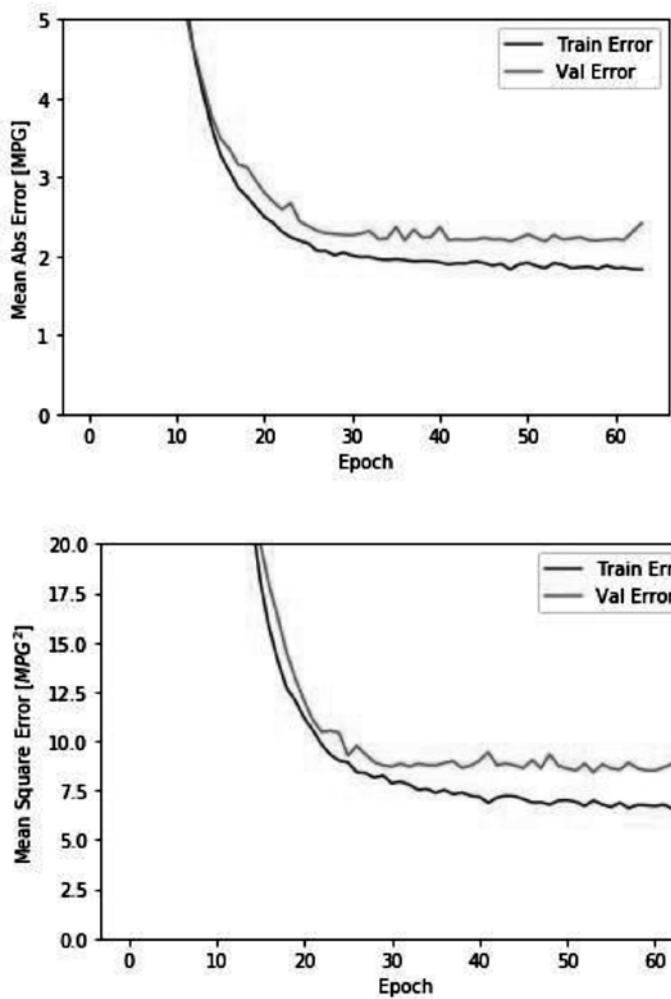
The above graph shows that on the validation set, the average error is usually around +/- 2 MPG. When we look at the error distribution is seeming to be our model predicts well. Moreover, the error distribution is less so that the accuracy is high.

Conclusion

This research shows the theoretical way and also a model is been built to come across the fuel consumption prediction in vehicles. The built model, the testing done in the model and the prediction done by that model is shown in the previous chapters. After the model is built, there are few ways to improve the built model. The possible improvements are listed below. By increasing the number of the hidden layers in model can change the final output. Moreover, increasing the hidden layers can make the accuracy of the prediction of the model. As a future improvement we can have android API and using the

API we can run the model in an android device. Therefore, by giving the parameters of a vehicle to the android API it can predict the fuel consumption in a mobile phone

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Possibilities of cyber security breaches (Phishing attack) when using social media (Facebook) at investment companies in Ampara district

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Abstract

The Investment companies marketing staff are share a wide verity of marketing promotions and relevant information using Social Media (Facebook) when using company network, but privacy implications are not properly investigated on Facebook. The increasing cyber-attacks over the past decade are focusing on most famous social media users who are not aware of risks in social media and their lack knowledge on threats of computer application. This paper is going to examine possibilities of security breaches when the company marketing staff using Facebook in listed investment companies (Without Bank) which has been already established in Ampara District. The breaches concern on Phishing attack and this paper is suggested an appropriate solution to overcome phishing e-mail in an Investment companies.

Keywords

Phishing Attack; Phisher; Computer User; Social Media; Facebook; Investment Companies; Financial Sectors; Bait; e-mail; Phishing e-mail Phishing is a form of electronic deception in which an attacker tries to cause the recipient to do something or disclose data that they likely would not normally do by mimicking a trustworthy entity. These attacks have been increasing at a n alarming rate and ca n cause damages in the form of identity theft, financial losses, and compromised security for organizations and governmental institutions. Additionally, phishing attacks have become very sophisticated and even more successful because of the lack of vigilance by computer users.

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Introduction and Literature Review

Phishing is a form of electronic deception in which an attacker tries to cause the recipient to do something or disclose data that they likely would not normally do by mimicking a trustworthy entity. These attacks have been increasing at an alarming rate and can cause damages in the form of identity theft, financial losses, and compromised security for organizations and governmental institutions. Additionally, phishing attacks have become very sophisticated and even more successful because of the lack of vigilance by computer users, (Kathryn Coronges, 2012). Over the course of history, technology

has vastly improved the ability of the human user. Specifically in the 1990s, internet and computer technology advanced at an extremely rapid rate, allowing humans virtually endless capabilities from the comfort of their own home. In 2017, Deaprtment of Census and statistics Sri Lanka reported that nearly 23.5% of Sri Lankan owened a personal computer (Like Desktop or Laptop), (Department of Census and Statistics, 2017). This increased technological capacity allowed Sri Lankans the ability to communicate with someone through Social Media, E- mail and perform tasks like paying the bills and shopping. Unfortunately, all of the increased benefits associated with computer technology came at the cost of personal security.

As users continue to utilize computers and access the internet to use Social Media (Facebook) daily from the Investment Companies where they are working fulltime and home for their company promotions and personal needs, they become more susceptible to a fraudulent scheme known as "phishing". Phishers try to lure victims to falsified websites, usually through spoofed emails, by "employing both social engineering incentives and technical subterfuge to steal consumers' personal identity data and financial account credentials" (Kathryn Coronges, 2012). Names, social security numbers, financial account passwords, credit card numbers, and bank account information are what phishers desire most, all of which they try to capture for their own personal gain, (Ronnie Taib, 2019). Sri Lanka cyber security (SLCS) was alarmed on 2012 about this phishing attacks in an investment companies and the SLCS was declared five fake websites which was targeted three government financial sector and two private financial sectors, (KOVILAGODAGE, 2012). Also, falling victim to a phishing attack can also be seen as a security risk where attackers have a higher probability of accessing secure networks like Financial Sectors and Investment Companies in Ampara District. Stealing identities and classified information through internal employees of investment companies have risk to compromise security efforts.

While the employees are using Facebook at the time of working hours using company network, it will be increasing the impact of Phishing Attack and incressing chances to collect the company account holders or share holders information through fake email access which has speaded by Facebook. Such as while employees chatting with anyother customer, if the customer send any fake website or e-mail which will give a change to Phisher to collect some data from the organization.

STAGE 1: THE BAIT   SATGE 2: GONE PHISHING   STAGE 3: THE CATCH

How a Phishing Attack happen in Investment companies in Ampara District.

Experimental

The authors have conducted many studies in the effectiveness of training and education in stemming a person's susceptibility to phishing. The most recent effort provides the data for the Investment Companies reported on in this paper. While only a subset of the population was used for the Investment Companies, the entire data collection effort is described below for completeness.

The phishing emails sent to all subjects (Whoever working on Investment Companies in Ampara District) included an embedded URL that when clicked takes users to a web site where they are asked to enter sensitive information (their organization network credentials). E-mails of the employees were collected by Facebook chatting. In all cases the email 'bait' leveraged knowledge of the users of computer (spear phishing), where some sort of free or discounted service appealing to the target population was used which was introduces by Phisher who was made chatting with employees as a Client.

The target population for all groups was 30 Investment Companies Employees. The population was broken down into three notification conditions. Notification condition was randomized by organizational unit. The target population for all groups was 30 Investment company employees in Ampara District. The population was broken down into three notification conditions. Notification condition was randomized by organizational unit.

Group 1 (No Notification): received the phishing email, however after the user entered data into the website and clicked submit, the page returned a server error and no additional information was provided to the user.

Group 2 (Notification): received the phishing email, after the user entered data into the website and clicked submit, the page returned a notice that they fell victim to a phishing attack and provided details as to what the user should have identified in the email.

Group 3 (Training): received the phishing email, after the user entered data into the website and clicked submit, the page returned a notice that they fell victim to a phishing attack and directed the user to take the institutions phishing awareness training.

Group 3 (Training): received the phishing email, after the user entered data into the website and clicked submit, the page returned a notice that they fell victim to a phishing attack and directed the user to take the institutions phishing awareness training.

Emails were sent from a third party service provider outside the institution's boundary. The service selected was phishme.com. Emails were sent from a third party service provider outside the investment company boundary. The service selected was cofense. com (phishme.com).

Result of Experiment

For this study, phishing victims are defined as users who clicked on the embedded link and those who entered their network credentials. Of the 30 users in different investment companies, 40% (12 participants)clicked on the embedded link within the email, 30% (09) of those users also entered their username and password to their network accounts, and 20% (06) successfully avoided the attach. Of 30 employees' phished, only 3 users in

this organization warned others about the potentially malicious email.

Research Findings and Suggestions

Investment companies are phishing attacked by internal employees and external parties. Internal employees are providing chances to external participates through their lack of knowledge in IT and Social Media (Facebook) protocols. Due to that most of internal employees are click embedded link without their proper knowledge in phishing attack, this habits has created chance to lost data and finance of the investment companies.

According to that Results and Findings of the research, The Investment Companies want to train their employees to prevent phishing attacks while the employees are using Facebook via company network as well as they have to implement proper secure methods to prevent phishing attacks in technically. This research is proposed that those kind of companies can implement following technical softwares,

1. AwareED : Focuses on awareness and education about phishing scams. It is a series of configurable learning modules that include videos and short tests. Individuals can be enrolled automatically and their progress monitored by the administrator.

2. PhishSIM : Is a phishing simulator. This robust program lets you create and send a wide variety of phishing emails to workers. However, instead of containing a link to a phony banking website, unsuspecting users who click on the enclosed link will be redirected to a safe web page that informs them of their mistake (called an Education). (INFOSEC, 2019)

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Real-Time Feeling Detection through Facial Expression Recognition: A Machine Learning Approach

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Abstract

Facial expression is a task that humans perform routinely and effectively in their day to day life. It is clear that understanding the emotional state of people can be useful for a range of applications from developing a better understanding of human psychology, to investigating behaviour for improved user experiences and etc. Humans are precise in reading the facial expressions of fellow humans. They usually predict someone's facial expression via observing the features of the face with the facial parts moment-to-moment basis in order to glimpse into their minds. Humans naturally learn the model of facial expressions from the environment and surroundings. They logically have facial expression models in their brain, and with the comparison of models, they are able to predict the facial expressions of others. However, when computer artificial intelligence (AI) technology is concerned, it is a hot topic in the field of computer vision and pattern recognition. It plays a significant role in various application domains such as surveillance, human-robot interaction, computer games' user experiences, stress-monitoring, and other kinds of artificial intelligence-based software programs. This research as an AI based facial expression recognition system with the help of computer vision and computational algorithms attempted to make it possible to mimic the face reading skills of humans to computers. This research aimed at designing a robust Facial Expression Recognition system by combining various techniques from computer vision and machine learning. This research also falls into the broad category of the psychological fundamentals of human facial expressions. Because, before the development process of this research as computer-based artificial intelligence system, it is very essential to study the human psychological factors about the facial expression in a more accurate manner. Therefore, for the training and demonstration purpose some human volunteers were involved into this research to proceed their facial expressions for different sorts of emotions. Depending on the data of volunteers' facial expressions and other internet resources' facial expression images, the system had been trained. This study presents a novel facial expression recognition system with modified Local Binary Patterns (LBP) for feature extraction and the Convolutional Neural Network (CNN) for feature optimization and edge detection. This research included many different kinds of artificial intelligence-based technologies, tools that were essential to build this facial expression recognition system. The ultimate aim of this research was to give expression detection ability to computers to find out the facial expression of a human being. In order to accomplish this task in a precise manner, the research involved into many different types of sub-topics and concepts in artificial intelligence such as computer vision, machine learning, face detection, face features extraction and some other kinds of pattern recognition mechanisms. The outcome of the research suggests that further research into this topic would lead to commercially viable solutions in future and the researchers have intended to continue the research in future too.

Author Keywords

Machine learning, Artificial intelligence, Computer vision, Pattern recognition, Facial expression, Computational Algorithms, Surveillance, Human-robot interaction, Local Binary Patterns (LBP), Convolutional Neural Network (CNN)

Introduction

In this modern world, computer plays major role in all aspects. As such, Artificial Intelligence (AI) is one of the most advanced technologies in computing and revolutionizing all industries. Computer vision is a sub set of AI. There are many useful applications have been developed with the use of computer vision technologies such as object detection, face recognition and etc.   The AI technology is about mimicking human abilities to computers. At present, computers are able to see real world objects, human faces, and they can even understand human voices and perform some actions according to instructions.

In computer vision, there are many technologies available such as face detection and face recognition, pattern recognition, image processing and etc. Therefore, with the help of those computer vision technologies, this research explores suitable method to create a facial expression recognition system to track human emotions. Therefore, it is essential to study the psychological background of human facial expressions and underlying concepts.

A facial expression is one or more motions or positions of the muscles beneath the skin of the face. According to one set of controversial theories, these movements convey the emotional state of an individual to observers. Facial expressions are a form of nonverbal communication and Humans have the ability to recognize facial expression naturally. There are some minor differences on facial expressions due to the cultural changes.

Alert Mehrabian studied and found that, nonverbal part is the most informative channel in social communication. This means Verbal part contributes about 7% of the message, vocal is 34% and facial expression about 55%. (Merhabian, 1971).
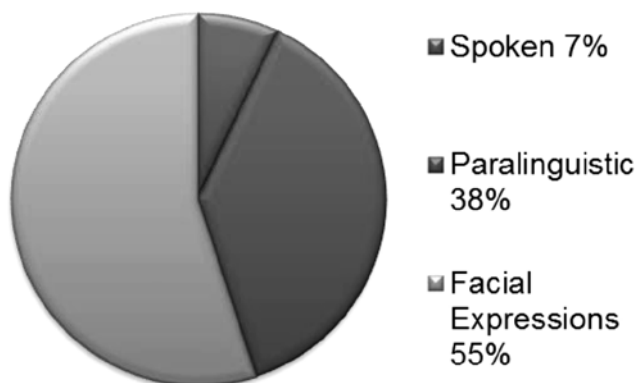
Figure 1: Communication Theory

The Paul Ekman found that, there are 6 basic universally accepted types of facial expressions. Those are happiness, sadness, fear, surprise, anger, and disgust (Ekman, 2009).
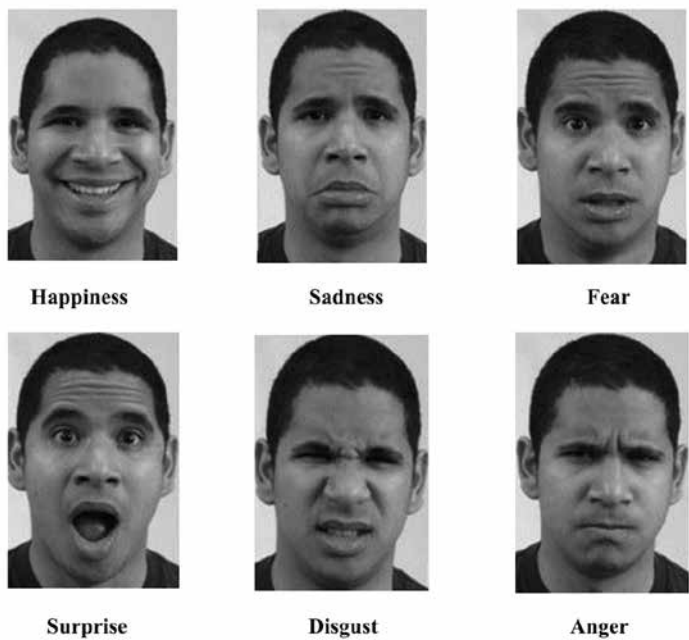
Figure 2: Basic six types of facial expressions

There are 7 types of basic face shapes are available such as round, oval, square, oblong, heart, triangle and diamond. Face contains 46 action units which are responsible for muscles movements.

Upper Face Action Units					
AU 1	AU 2	AU 4	AU 5	AU 6	AU 7
Inner Brow Raiser	Outer Brow Raiser	Brow Lowerer	Upper Lid Raiser	Cheek Raiser	Lid Tightener
*AU 41	*AU 42	*AU 43	AU 44	AU 45	AU 46
Lid Droop	Slit	Eyes Closed	Squint	Blink	Wink
Lower Face Action Units					
AU 9	AU 10	AU 11	AU 12	AU 13	AU 14
Nose Wrinkler	Upper Lip Raiser	Nasolabial Deepener	Lip Corner Puller	Cheek Puffer	Dimpler
AU 15	AU 16	AU 17	AU 18	AU 20	AU 22
Lip Corner Depressor	Lower Lip Depressor	Chin Raiser	Lip Puckerer	Lip Stretcher	Lip Funneler
AU 23	AU 24	*AU 25	*AU 26	*AU 27	AU 28
Lip Tightener	Lip Pressor	Lips Part	Jaw Drop	Mouth Stretch	Lip Suck

Figure 3: Facial action coding system (FACS)

With the help of these psychological background of facial expression related information, This research tries to give computers the ability to recognize facial expressions with the integration of machine learning techniques and algorithms such as face detection and alignment, image normalization, feature extraction, and classification.

Experimental
In order to find an effective approach to solve this problem, the psychological background of facial expression has been thoroughly studied. Because, without having deeper level of understanding about facial expression, it is impossible to give these humanly skills to computers.

The data collected related to psychological aspects are of Qualitative nature. However, this research also dealt with quantitative data such as statistics, logical, binary, and mathematical tensor data in terms of Machine Learning aspect. Therefore, this research approach can be categorized as mixed one.

At the beginning, data related to facial expressions such as muscle details, basic types of emotions, face shapes, feeling of humans, deeper level understanding of facial expressions were collected.
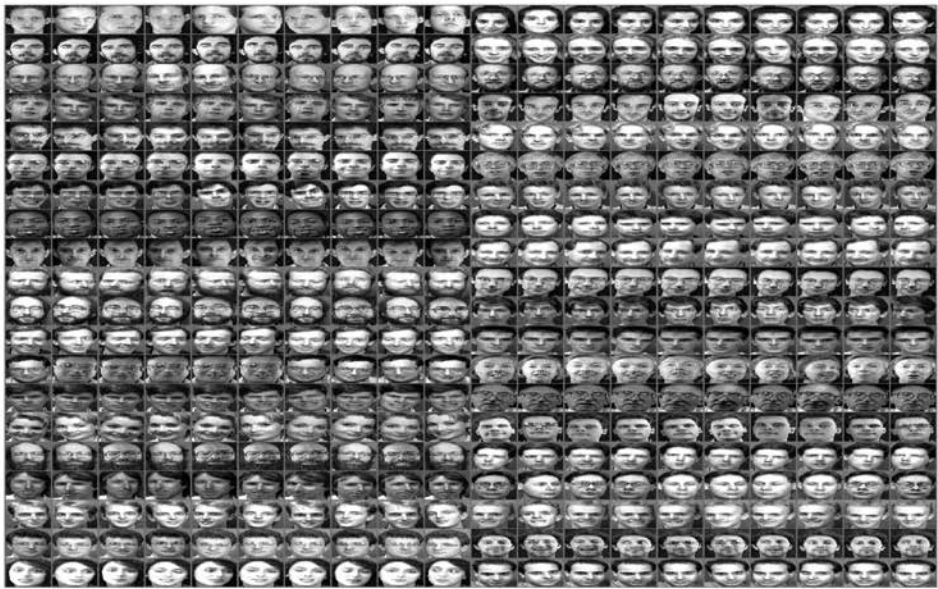
Figure 04: Sample Dataset of Faces with different expressions

Then studied the technological part of the research such as algorithms, dataset, Support Vector Machine (SVM), Convolutional Neural Network (CNN), Local Binary Pattern (LBP) and etc
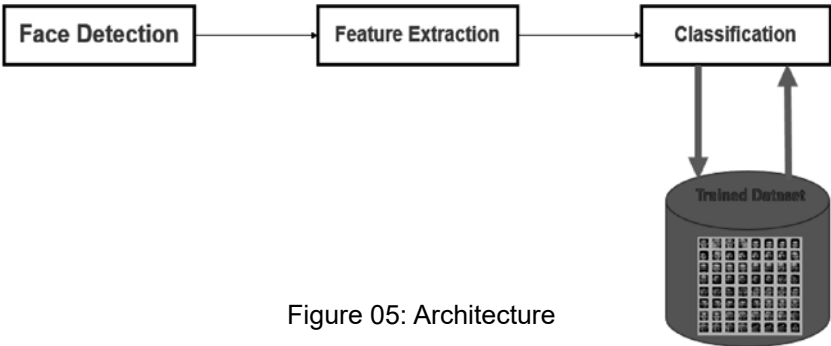
Figure 05: Architecture

In conclusion, this research bases problems and objectives in view of Qualitative data which is the psychological background of facial expression. Then with the help of those data, it tried to find out solutions to solve those problems and objectives using machine learning algorithms, methods and techniques. The machine learning involved in finding solutions for those problems and objectives via Quantitative approaches of Machine Learning.

This research outlines that there are six types of basic facial expressions: happiness, sadness, surprise, fear, anger, and disgust as found by Paul Ekman in 1972 and face consists of 46 action units which are related to contraction of a specific set of facial muscles. Further, according to psychological research conducted by Alert Mehrabian, nonverbal part is the most informative channel in social communication and verbal part contributes about 7% of the message, vocal is 34% and facial expression about 55%. Also there are seven types of basic facial shapes are available such as round, oval, square, oblong, heart, triangle and diamond. Further, according to the research conducted by the Northeastern University of America, the professor Lisa Barrett found that the cultural differences will make slightly minor different changes in Facial Expressions. In terms of Machine Learning, tensorflow is a machine learning framework for developing Artificial Intelligence based applications and OpenCV is another machine learning library which is used to develop computer vision applications. Further, Haarcascade_frontalface.xml is a pre-trained dataset which is used for locating faces in a video frame. In addition to that, CK+ is a Facial Expression Dataset which includes basic six types of emotions such as happiness, sadness, surprise, fear, anger, and disgust.

In Conclusion, this research problem can be addressed with the help of computer vision and pattern recognition utilizing suitable machine learning algorithms. Further, In order to give facial expression reading skills to computers, it is suggested to Viola-Jones face detection algorithm for locating human faces in a video frame via using Haarcascade Frontalface pre-trained XML dataset. And Convolutional Neural Network (CNN) and Local Binary Pattern (LBP) are the right suitable machine learning algorithm for feature extraction and classification. Preprocessing must be carried out before the feature extraction and classification stages because, the preprocessing is a process which can be used to improve the performance of the FER system via removing noises from images. Further, the tensorflow grap model must me trained more than 60000 steps in order to obtain better results and the input image must be converted into grayscale and should be a single channel.

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Factors Influencing the Adoption of Information and Communication Technology into Teaching: An Empirical Study Based on Primary Schools in Ampara District

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Abstract

Today Information Technology has become a vital part of our lives and it is totally changed our day to day activities. Use of Information and Communication Technologies (ICT) in the teaching and learning process makes teaching more effective. The best way to take advantage of ICT is, its integration into the teaching process. This research examined the factors influencing the adoption of information and communication technology into teaching, such as personal, institutional and technological factors. For this survey 100 questionnaires were issued among 30 primary school teachers consisted of 75% female and 25% of male in Ampara District. Results showed that ICT adoption significantly correlated with three independent variables. Among those variables, personal factors had 52% of strong influence on the adoption.

Author Keywords

Correlation, ICT adoption, Institution, Primary education, Teaching and learning process

Introduction

Today information technology (IT) has become an indispensable element of our lives and totally changed the way we accomplish the daily tasks. There are numerous success stories of various sectors such as health care, architecture, manufacturing, banking and entertainment . However, the education sector has not been able to obtain equivalent benefits from its IT implementations. Despite the adoption of IT in the education sector is continuously accused with crudely managed operations, impoverished coordination among departments, inadequate utilization of resources, lack of accountability and transparency, outdated curriculum and poor educational quality. But ICT is becoming increasingly important in our daily lives and in our educational system. Therefore, there is a growing demand on primary education to enhance the ICT relevant skills and knowledge to the students to meet the 21st century's challenges in the education sector. Teachers should integrate technology and instructions properly into their curriculum in their teaching process. Total investment in ICT to improve teaching and learning in schools have been proposed by many governments, but the efficiency of the usage is very poor. Today's primary schools try to restructure their educational curriculum and classroom facilities in order to achieve the existing technology gap in teaching and learning. This reformation process requires effective adoption of technologies to survive in the modern era in order to generate ICT based learners with extraordinary knowledge to enhance professional quality.

Literature Review

Technology has transformed teaching and learning places. Many primary schools have

been adopting and making changes to become technology friendly places. These adjustments require much investment on the part of the schools, but this investment has not proved in classroom settings (Dahmani, 2008).Too many factors influencing the adoption and integration of ICT into teaching have been identified by researchers (Rogers, 2003). Leidner D.E. and Jarvenpaa S. L. (1995) depicted that education sector is investing heavily on ICT, but ICT adoption in education sector lagged behind the business sector.

Research Methodology

The aim of the research is to explore the Factors influencing the adoption of information and communication technology into teaching. Quantitative surveys were conducted in this study to investigate the factors of adoption in Ampara district.The sample of this study consisted of primary school teachers in Ampara district. The data was collected by using the random sampling method. The participants comprised 100 teachers of which 75% were female. The results of the research is based on the responses of 100 accurately filled in questionnaires. The data was analyzed using SPSS 20. Descriptive statistics were used to analyze responses received from the research participants.

The influencing factors were categorized under three main clusters. Such as personal, institutional and technological factors. The conceptual framework has created by using the literature survey.
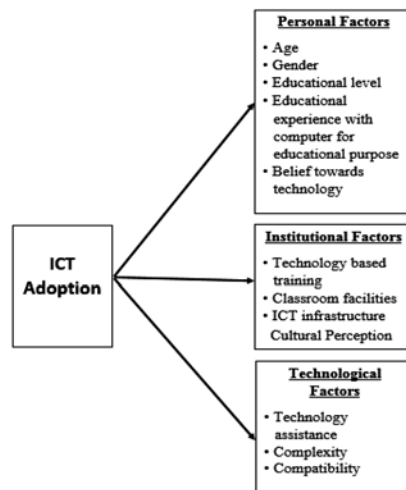
Figure 1: Conceptual Framework

Data Analysis and Discussion

The respondents of the study were 75% of female and 25% of male primary teachers. From the findings 53% of the respondents had above 11 years of teaching experience, 26% had the teaching experience below 5 years, while 21% of the teachers has taught between 5-10 years. According to the results 52% of personal factors, 33% of institutional factors and 15% of technological factors affecting the adoption and integration of information and communication technology into teaching. Among the above three factors, personal factor had strong influence.

Under the category of personal factor, educational level and belief towards technology were the prominent sub factors. Many teachers not believing that technology will effect on the students' learning process. Participants reported that anxiety, lack of confidence, competence and fear were the reasons to go backward to the conventional learning methods. Teachers' positive belief towards technology strongly depends on effective initiation and implementation on the education. It can easily provide the useful awareness of the adoption and integration of ICT into teaching and learning process. Another major sub factor under the personal factor was educational level of the teachers. It is very important ability to handle a wide range of varying computer applications for various purposes. The majority of teachers were shown the negative attitude towards the integration and adoption of technology into teaching and learning process, reported that lacked knowledge and skills that wouldn't allow them to adopt into technology and they were not in the conditions for effective use of technology in the classrooms.

In the Institutional factor Lack of hardware, software and technological tools of the government to support teaching and learning was an important determinant. Obviously, if teachers can not able to access technological resources, then they will not willing to adopt technology and encourage the students. it is necessary that students have access to quality technology resources. Further in this study,the majority of them reported 51.3% of the schools don't have enough ICT infrastructure to make smart classrooms. This was the great barrier to ICT use in the teaching process. The technological factors, such as system complexity and compatibility has an influence on the adoption. ICT adoption bring complexity for primary schools with lack of hardware and software facilities.

Results showed that technological factor discourage teachers' use of computer technology in classrooms. System failure of a network causes interruptions and the lack of technical assistance made the critical situations. The effect is that the teachers were discouraged and frustrated of using computers because of fear of equipment failure.

Conclusion
The study has concluded that ICT has a great impact on the primary students learning process in this era. There are many factors that influences on the adoption process. In this research there are three factors were identified, such as Personal, Institutional and Technological. Among those, personal factor had a vital role in the adoption. Educational level and Belief towards technology were the prominent sub factors under the personal factor. At the same time Institutional and technological factors has less significant than the personal factor.

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Preparing HND in Computing Students for Employability in light of SLASSCOM's Survey on Employability Skills: Reference to ABC Campus

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Abstract

Employability is the ability of being employable and a measure how easily a graduate is able to get an employment in his or her respective field. On the other hand, due to rapid changes taking place in industries in general and Information Technology industry in particular, the required skills set are volatile. It is vital for any higher education institution to align their curriculum and extra curriculum based activities in such a way that upon successful completion of the respective programme, the graduates are easily employable. This study focuses on HND in computing students of ABC Campus in light of SLASSCOM's Survey on Employability Skills which identifies Conceptual knowledge in technical areas, Effective verbal communication, Willingness to learn / continuous personal development, Sound IT literacy, Team work and effective working with others, Application of technical knowledge gained through internships, Problem solving, Positive attitude, Creativity and innovation and Attention to detail are the top ten competencies. Though the academic qualification required by IT based industries are IT or computing related degree in general, HND in Computing is an important milestone to pursue top-up degree for a student who studies at ABC. Yet empirical evidences show students who have secured higher grades in Professional Practice Module with Good Verbal Communication skills are able to get internship opportunities and trainee positions with their HND in Computing qualification which resulted from active participation of lecture and practical sessions and a good academic background in secondary school education. The findings of this study recommend the strict adherence of entry criteria upon enrolling students for HND in Computing programme which would ensure the students have adequate knowledge in English and Mathematics. Further a mechanism for enforcing students to actively participate in academic and practical sessions along with individual and group projects. At the institutional level, steps should be taken to collaborate with industry through frequent industry visits, guest lectures along with liaising with industries to provide internships at the end of 3rd Semester.

Author Keywords

Employability Skills, Information Technology, Students, Extra Curricular Activities, Professional Practice, SLASSCOM

Introduction

One of the core expectations of any academic programme is to produce industry relevant employable graduates with adequate knowledge and skills to perform in an expected way. Information Technology is one such academic discipline where with the technological advancement has open many doors for diverse range of job opportunities in Sri Lanka and across the world. Taking this into account many state universities offer programmes related to Information Technology or Computing. In addition to that, many

private higher education institutions offer BTEC HND in Computing with specializations in Software Engineering & Network Engineering which leads to Top-Up Honours Degree in relevant specialization. ABC Campus being one of such institution, this study focuses on the present status of these HND in Computing students and attempts to shape them for employability in light of SLASSCOM (Sri Lanka Association of Software and Services Companies)'s survey on employability skills. The survey was carried out in view of identifying employability skills that are required by industry and to analyzing the gaps in order to initiate appropriate interventions. At the participation of 28 companies, the survey outlines the following key skills which are essential for any IT graduates in order to be employable the sooner they are graduated.
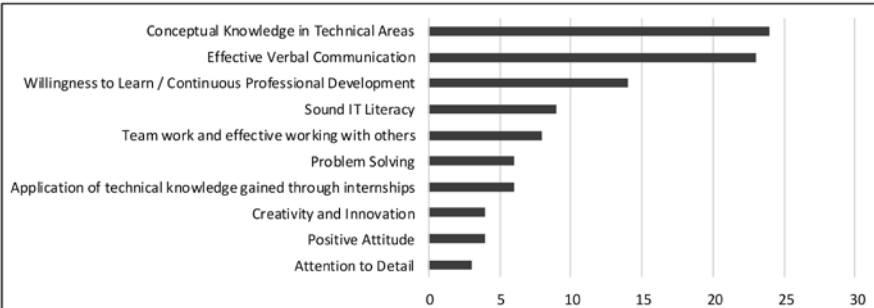
Figure 01: Top 10 Competencies employers expect from Graduates (SLASSCOM's Survey)

In light of the above competencies (SLASSCOM, 2018), it is attempted to study the position of HND graduates at present and provide meaningful interventions in order to increase the employability of HND graduates when they complete their Top-Up Degrees.

Semester	Level	Software Specialization Module Name	Network Specialization Module Name	Credits	Hours
1	L4-Core	Programming	Programming	15	60
	L4-Core	Networking	Networking	15	60
	L4-Core	Professional Practice	Professional Practice	15	60
	L4-Core	Database Design & Development	Database Design & Development	15	60
2	L4-Core	Security	Security	15	60
	L4-Core	Managing a Successful Computing Project	Managing a Successful Computing Project	15	60
	L4-Opt	Software Development Lifecycles	Maths for Computing	15	60
	L4-Opt	Advanced Programming	Computer Systems Architecture	15	60
3	L5-SP-Core	Website Design & Development	Network Security	15	60
	L5-SP-Core	Application Development	Cloud Computing	15	60
	L5-Core	Computing Research Project	Computing Research Project 01	15	60
	L5-SP-Core	Discrete Maths	Transport Network Design	15	60
4	L5-OPT	Data Structures & Algorithms	Network Management	15	60
	L5-OPT	Application Program Interfaces	Internet of Things	15	60
	L5-Core	Business Intelligence	Business Intelligence	15	60
	L5-Core	Computing Research Project	Computing Research Project 02	15	60

Figure 02: Modules taught for BTEC HND in Computing (Software / Network Specializations)

Experimental

Based on the above survey, 39 HND holders from 4 batches were participated in this study. It is observed that the academic results do not have significant effect on employability. However, surprisingly there is a correlation between the results achieved by students on Professional Practice module delivered at semester 01 and the employability. Further, there is a strong correlation between those who exhibited self-initiative outside of the classroom and employment. Findings also strongly agree with the SLASSCOM's survey with regard to the Effective Verbal Communication. It is clearly evident that student who exhibited good command of English and Presentation skills were able to secure jobs easily.

Batch No	No. of Students
01	05
02	13
03	11
04	10

Figure 03: Research Participants

In conclusion, the findings suggest that Professional Practice module at Semester 01, should be given more importance and should be taught in view of inculcating the highlighted skills that are required by employers in order to ensure the students are readily employable. It is also evident that the content of the Professional Practice module covers the key employability skills found in SLASSCOM's survey.

It is recommended that the institution and the department take effort in ensuring the active participation of students' particularly in Professional Practice module through which Willingness to Learn or the attitude of Self-initiative should be developed among the students which will enable the students to acquire other skills easily.

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A Study of Feasibility to use of Paddy Husk Ash as a Cement Supplementary Material for Concrete in Sri Lanka

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Abstract

An increase in the demand of feasible construction materials and the need for providing a supportable growth in the construction field has encouraged the designers and developers to select for 'substitute materials' viable for use in construction. For this objective, the use of industrial wastages and agricultural by products such as Fly Ash, Paddy Husk Ash, Silica Fume and GGBS can be supplemented instead of cement because of their Pozzolanic behaviour, which otherwise wants large tract of lands for discarding. In the present investigation, Paddy Husk Ash has been used as a supplement to cement in concrete and its properties has been studied. An attempt was also made to inspect the strength and workability parameters of concrete. Strength and workability tests were performed Strength and Workability tests were performed, following ASTM (American Society for Testing Material). And Recommending the Proportions of Mix of Paddy Husk Ash. Since normal concrete, mix design is done based on American Concrete Industry (ACI) method and taking this as a reference, mix design has been made for replacement of Paddy Husk Ash. Six different replacement levels, namely 5%, 10%, 15%, 20%, 25% and 30% are selected and studied with respect to the replacement method.

Author Keywords

Cement Supplement Material, Paddy Husk Ash, Workability and Compressive Strength

Introduction

Concrete is by far the most versatile and most widely used construction material worldwide since it can be made into any shape by the simple shuttering or mould. Its major applications of concrete include: buildings, bridges, dams, roads etc. Concrete is generally made up of with three basic components: Water, Aggregate (Coarse Aggregate and Fine Aggregate) and Cement. Cement usually is in a powder form, acts as a binding agent when the presence of water with other ingredients. Sri Lanka is a developing country, because of that construction industry also developing. In future Sri Lanka might be like concrete forest. Purpose of concrete is increasing day by day. Industry spending more money to concrete because concrete is one of the main material in the building. Therefore cement manufacturing is increasing because cement is the main binding agent to the concrete. Cement is manufactured from Sodium Carbonate (NaCO3), but Sodium Carbonate is the natural source, manufacturing the cement is destructing the natural source. And another main problem is Durability of concrete. This Durability of concrete problems is the Emerge Trend in developed countries, but Sri Lanka will face this kind of problem in after 40 / 50 years.

Therefore, increasing the durability and reducing the Natural Source destruction there

is always a demand for inventing the new CSM for the construction industry. Currently industry people using some supplementary materials most popular are fly ash, silica fume and slag with cement. But this supplementary material is not possible to import for small scale, batching plant, because this cement supplementary materials are very expensive one and not available in all the country. This cement supplementary material can possible to import only for big scale batching plants.

Therefore In this research paddy husk ash is selected as a cement supplementary material. Because PHA is produced in Sri Lanka per year 558 800 tons (Marcelina Alvarez, 2006). In construction work contractor spending more money for concrete because getting concrete from batching plant is in high price. Concrete batching plant deciding the concrete price according to their material and serviceability. If this research succeeds, it might give some hopes to all scales, batching plants to produce a more concrete. Because Paddy Husk Ash is very economical and they can collect it very easily in Sri Lanka.

Experimental
This research investigation on the behaviour of concrete produced partial replacement of cement with Paddy Husk Ash (PHA). The present research investigation focus on the valuation of the suitability of Paddy Husk Ash a cementitious material by conducting various Physical Analysis and hence to understand the impact of PHA on concrete properties (in Fresh state and Hardened state). Moreover, finding the K value known as water / PHA and Cement ratio.

Concrete mixture proportioning was performed to produce high workability concrete with the target strength of 33.5 MPa (Grade 25) for the control mix.

All the Tests and Mix Design was prepared through American Society for Testing Materials (ASTM) and American Concrete Institute (ACI).

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Design and Construction of IoT based Smart Home Electricity Assistant

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Abstract

It is investigated that, Sri Lanka national electrification ratio is 99.9% in 2018, and still most of the consumers are not aware of Sri Lankan electricity tariff system. As a result of this, customers struggle to control and limit the usage of electricity. In order to overcome this, developing a project which can optimize the usage of electricity and reduce the overall electricity expenditure in efficient manner especially for residence and small business applications is essential.

With the increase in consumption of energy and population, there is a grave need to conserve energy in every way possible. By taking this into account, we combined this concept with smart home automation, as home automation is becoming more popular due to its numerous benefits.

A smart home automation system is designed by keeping the Sri Lankan electricity tariff and practices in mind. This system consists of one master and several slave devices: Slave devices control each rooms with sensor networks, and master device collects all the sensor data from the slave devices and analyses the power usage as well as it has a standalone Human Machine Interface (HMI) which allows the user to control the home appliances manually. Raspberry Pi 3 Model B single board computer with windows 10 Internet of Things (IoT) core operating system and Arduino UNOs are used for master and wired slave devices respectively. In addition, Arduino Pro Minis are used for wireless slave devices. The master device uses Inter Integrated Circuit (I2C) communication protocol to communicate with sensor networks. Serial Peripheral Interface (SPI) communication protocol is used to communicate with wireless slave devices using 2.4 GHz, NRF 24L01+ module.

The IoT feature allows the users to login, control and monitor their smart home system remotely from anywhere in the world with the help of The Internet. Moreover, the system gives suggestions and information to the users on how our electricity tariff system works to minimize power consumption. It leads the users to control the usage of electricity in effective manner.

Application of 'Machine Learning Technique' for the Schedule of Immunization for EPI Vaccines – Sri Lanka

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Abstract

Vaccination is being used for the protection and for the eradication life-threatening infectious diseases from the day we are born. These complex biological products are constantly designed and developed due to the advancements of the medical industry which grounds a protective immune response for toxic actions of specific antibodies.

Based on the records of National Expanded Programme on Immunization programme, the Epidemiology Unit of the Ministry of Health a vaccine schedule for newborns and children up to 12 years have been set up. As per the recommendation of WHO children under five years are immunized with against eight diseases - measles, hepatitis B, and Hib, pertussis, polio, tuberculosis, diphtheria and tetanus preventing more than 2.5 million child deaths globally each year with the assistance of UNICEF donors.

One of the identified KPIs in this sector is 'determining the adequate amount of vaccines with accurate prediction' as a reliable method as limitations are identified due to the fact that the prediction happen manually causing a loss of revenue and a considerable wastage of drugs.

Thus, the research concept would explicit a computer based predicting model by Machine Learning technique in determining the amount of vaccines required for the children of the age category of 0 to 5. A dummy function was created considering massive quantities of data sets such as statistics of the pregnancies, live births etc. Then the best prediction function / hypothesis was obtained after series of Iterative adjustments followed by gradient descent algorithms using polynomial regression as a mathematical tools.

Author Keywords

Dummy function, Epidemiology Unit, Gradient Descent, hypothesis, Iterative adjustments, machine Learning, training set.

Introduction

All vaccines in Sri lanka have been self-procured for past two decades in National Immunization Programme (NIP) except for a few such as Hepatitis B vaccine (2004-2007), Penta vaccine(2008 to 2014) and IPV (2015 -2018) funded by GAVI (Global Alliance for Vaccines and Immunization) which is a global health partnership committed for immunisation in poor countries. However the private sector contribution to the vaccines is not much significant. The main objective of the researcher was to accurately determine the amount of vaccines needed for new-borns and children up to five years of age.

The government policy of determining the amount of vaccines required is done by manual prediction based on the annual requirement in institutional, regional, provincial and national levels. These are mainly handled by the Ministry of health with the aid of State Pharmaceuticals Corporation.

The researcher has introduced a computer based function to determine the amount of vaccines required in order to eliminate the drawbacks of manual prediction which could lead to wastage of vaccines despite the fact that vaccines are decided to be discarded due to quality failures and reactions in them.

The technique which was used to employ the desired output was Machine learning as a branch of artificial intelligence which allows computers to recognize complex data patterns and helps in predicting and forecasting without explicitly being programmed and automates analytical model building. With this technique the computer can be fed with data which has desired outputs or even with some targeted outputs missing.

Experimental
The key principle of the research idea was to find out the optimum function that best describes the accurate amount of vaccines needed. The vaccines that were determined by the hypothesis were BCG (Bacille Calmette-Guerin) which is given within 24 hours of birth, OPV & Pentavalent (DTP - HepB-Hib) on completion of 2nd, 4th and 6th month, Live JE (Japanese Encephalitis) vaccine after completing 9 months, MMR (Measles, Mumps, and Rubella) 1st Dose at 12 months, OPV (Oral Polio Vaccine) & DTP (diphtheria, tetanus toxoids and pertussis) 4th dose at one and half years, MMR 2nd dose at three years, OPV & DT 5th dose at five years. The following were fed as input variables which were also identified as the affecting factors when determining the amount of drug stock needed.

First the following data was fed which are some factors to be considered in determining the amount of vaccines and the past records of vaccines actually used.

x_1 – Year

x_2 – Live births

x_3 – Sudden infant death syndrome (SIDS)

x_4 – Congenital Malformations

x_5 – Deaths due to accidental suffocation and strangulation in bed.

x_6 – Postneonatal Mortality

x_7 – Age of mother

x_8 – Amount of BCG vaccines used

x_9 – Amount of OPV, DTP - HepB-Hib Pentavalent

x_{10} – Amount of Live JE (Japanese Encephalitis)

x_{10} – Amount of Live JE (Japanese Encephalitis)

x_{11} – Amount of OPV (Oral Polio Vaccine) & DTP

x_{12} – Amount of MMR

x_{13} – Amount of OPV & DT

x_{14} – Maternal mortality rate

x_{15} – Infant mortality rate

x_{16} – Pregnancies per year

Then the below was selected as the hypothesis.

$h_0(x) = \theta_0 + \theta_1 x_1 + \theta_2 x_2 + \theta_3 x_3 + \theta_4 x_4{}^3 + + \theta_5 x_6 + \theta_0 x_2{}^2 + \theta_1 \theta_2 x_1 + \theta_4 x_2 + \theta_3{}^2 \theta_2 x_9 + \theta_4 x_8 + \theta_6 x_4{}^3 + \theta_7 x_7 + \theta_5 x_6 + \theta_{11}{}^2 \theta_2 x_{12} + \theta_8 x_{15} + \theta_3{}^2 \theta_{13} x_{13} + \theta_5 x_{10} + \theta_5 x_{12} + \theta_2 x_2 + \theta_5 x_{14} + + \theta_3{}^2 \theta_2 x_{11}$ The data set which were fed were rearranged as a training example and denoted as follows. $(\underline{x},y)$ with known inputs $(\underline{x})$ and outputs.

$$\underline{x} \begin{Bmatrix} x_1 \\ x_2 \\ . \\ . \\ . \\ x_{15} \end{Bmatrix} \qquad \underline{y} \begin{Bmatrix} y_1 \\ y_2 \\ . \\ . \\ . \\ y_{15} \end{Bmatrix}$$

$$\underline{x} \begin{bmatrix} x_1{}^{(1)} & x_1{}^{(2)} & x_1{}^{(3)} & . & . & . & . & . & . & . & . & x_1{}^{(m)} \\ x_2{}^{(1)} & x_2{}^{(2)} & x_2{}^{(3)} & . & . & . & . & . & . & . & . & x_2{}^{(m)} \\ . & . & . & . & . & . & . & . & . & . & . & . \\ . & . & . & . & . & . & . & . & . & . & . & . \\ . & . & . & . & . & . & . & . & . & . & . & . \\ x_{15}{}^{(1)} & x_{15}{}^{(2)} & x_{15}{}^{(3)} & . & . & . & . & . & . & . & . & x_{15}{}^{(m)} \end{bmatrix}$$

Total of input data given by a matrix with m training examples.

The steps which were followed while obtaining the optimum function could be stated as follows. At first the initial function was being trained using training examples initializing with zeroes. At each time the training examples were read by the machine as one forward pass and one backward pass which is identified as an epoch. At each iteration time the parameters θ_(n) of the function were repeatedly being updated and it was assumed that the last updated model was precise. When considering the function after n epochs all the training examples for n times are being considered. Therefore the higher the iterations the higher the accuracy if the error is reaching its minimum. In each time an error is obtained. Cost function is used to monitor the error of the hypothesis. The objective of the algorithm was to obtain the minimum cost function. Gradient Descent is the algorithm being used in this method which takes calculus into account as the first derivative of a function gives the gradient and this always points towards the local

minima which helps in determining the minimum error function. This gives the optimum function for forecasting i.e. the amount of vaccines needed.

Conclusion
Not only to determine the vaccines to be given for the children of aged zero to five; this method could be employed in determining the tetanus toxoid vaccine during the pregnancy. Also not only for scheduled vaccines a model can also be used in determining the vaccines given for Immigrants, the vaccines that are given to cancer patients with the identification of the facts that leads to cancer. Also this model can be developed to find out the amount of vaccinations needed provincially or regionally as a method of no implementation or current cost is required at all.

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Antioxidant activity of *Salicornia brachiata* (Glasswort)

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Abstract

This study examined the anti-oxidant activity of an aqueous extract of Salicornia brachiata which is belonging to Amaranthaceae family. For evaluation of anti-oxidant activity, the DPPH radical scavenging assay was carried out and Ascorbic acid was used as the positive control for this assay. Concentrations of both plant extract and Ascorbic acid, were used as 250, 500, 1000, 1500 and 2000 µg/ml and each concentration was quadruplicated. Both Salicornia brachiata (r2 =0.9904, p<0.05) and Ascorbic acid (r2 = 0.9951, p<0.05) showed a marked and concentration dependent and DPPH radical scavenging ability with IC50 value of 700.30 µg/ml and 467.30 µg/ml respectively. For phytochemical screening, the aqueous extract of Salicornia brachiata showed the presence of phenols, flavonoids, alkaloids and saponins. According to the results of this study, it is concluded that aqueous extract of Salicornia brachiata anti-oxidant activity which are facilitated by phytochemicals and this plant can be further developed as a potential disease curing remedy.

Keywords

Salicornia brachiata, DPPH radical scavenging, anti-oxidant

Introduction

Plants play an important role by supplying food for humans. There is an increasing tendency to consume natural drugs and herbal therapies due to destructive nature, environmental pollution and side effects of chemical drugs (Sharifi-Rad et al., 2014). Plants are excellent sources of antioxidants and agents (Elisha et al., 2016). Salicornia brachiata is commonly known as pickleweed, glasswort, sea beans, sea asparagus, crow's foot greens and belonging to Amaranthaceae family. This Salicornia name had been originated from the Latin word meaning 'salt'. This fleshy plant can be found at the edges of wetlands, marshes, sea shores, and mudflats mostly on alkaline flats. This plant is composed of spongy stems with diminutive scale-like leaves, inconspicuous flowers and fruits. In autumn the green plant becomes orange, pink to reddish before drying in winter (Patel, 2016). Salicornia brachiata is used as a traditional medicine to treat a range of diseases such obesity, diabetes and cancers. And also this plant is known to have antibacterial, antifungal and ant-oxidant activity because of this plant contains variety of bioactive compounds (Santhanakrishnan et al., 2013).

Oxidation is essential for many living organisms to fuel biological procedures with energy production. Continuously produced in vivo oxygen centered free radicals and other reactive oxygen species (ROS) cause cell death and tissue damages. Interaction of antioxidants stabilizes free radicals and prevents the damages cause by free radicals (Santhanakrishnan et al, 2013). A fast, simple and inexpensive method for measuring plants' antioxidant capacity includes the use of free radical 2, 2-Diphenyl-1- picrylhydrazyl (DPPH), which is commonly used to assess ability of compounds to behave as free radical scavengers or hydrogen donors and to assess antioxidant activity. The DPPH

assay method is based on DPPH reduction, a stable free radical. The free radical DPPH with an odd electron provides maximum absorption at 517 nm (purple colour) (Shekhar and Anju, 2014).

Therefore in this study, Salicornia brachiata which is claimed to have antioxidant properties in traditional medicine in Sri Lanka was tested to investigate the presence of the antioxidant properties of this plant on the basis of dosage. The other objective of this study was to investigate the phytochemical profile of the aqueous extract of Salicornia brachiata by using standard methods.

Experimental

Sri Lankan traditional medical books were referred as well as Institute of Ayurveda website of Sri Lanka was searched for selection of a suitable plant. The halophyte, Salicornia brachiata belonging to the Amaranthaceae family was selected as the plant and it was collected from Kalpitiya, Sri Lanka.

The freeze dried powder was dissolved in methanol to obtain the required dosages in 1 ml solution. Specific concentrations were prepared separately for Salicornia brachiata as 250 μg/ml, 500 μg/ml, 1000 μg/ml, 1500 μg/ml, and 2000 μg/ml. Four samples of each concentrations were prepared (n=4). Methanol was used as negative control for this assay. Specific concentrations of 250 μg/ml, 500 μg/ml, 1000 μg/ml, 1500 μg/ml, 2000 μg/ml. Ascorbic acid were used as the positive control of this assay. Four samples of each concentrations were prepared for the Ascorbic (n=4). Prepared samples were added to the reaction mixture consisted of 5 ml of 0.004% (w/v) DPPH solution. The obtained mixture was shaken well and incubated for 30 minutes in room temperature in dark place. Then the absorbance was measured at 517 nm wave 23 length. The decrease in absorbance on test samples was used to calculate the antioxidant activity. The percentage inhibition of DPPH radical was calculated y following equation (Santhanakrishnan et al, 2013).

$$\text{Percentage inhibition (\%)} = [(Ac - As) / Ac] \times 100$$

Where, As was used as the absorbance of sample and Ac was used as the absorbance of control.

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In Vitro Evaluation of the Inhibitory Effect of Topical Ophthalmic Agents on Acanthamoeba Viability

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Abstract

Purpose: To compare the antimicrobial effect of topical an aesthetics, antivirals, antibiotics, and biocides on the viability of Acanthamoeba cysts and trophozoites invitro.

Methods : Amoebicidal and cysticidal assays were performed against both trophozoites and cysts of Acanthamoeba castellanii (ATCC 50370) and Acanthamoeba polyphaga (ATCC 30461). Test agents included topical ophthalmic preparations of common anaesthetics, antivirals, antibiotics, and biocides. Organisms were exposed to serial two-fold dilutions of the test compounds in the wells of a microtiter plate to examine the effect on Acanthamoeba spp. In addition, the toxicity of each of the test compounds was determined against a mammalian cell line.

Results : Proxymetacaine, oxybuprocaine, and especially tetracaine were all toxic to the trophozoites and cysts of Acanthamoeba spp., but lidocaine was well tolerated. The presence of the benzalkonium chloride (BAC) preservative in levofloxacin caused a high level of toxicity to trophozoites and cysts. With the diamidines, the presence of BAC in the propamidine drops was responsible for the activity against Acanthamoeba spp. Hexamidine drops without BAC showed good activity against trophozoites, and the biguanides polyhexamethylene biguanide, chlorhexidine, alexidine, and octenidine all showed excellent activity against trophozoites and cysts of both species.

Conclusions : The anti-amoebic effects of BAC, povidone iodine, and tetracaine are superior to the current diamidines and slightly inferior to the biguanides used in the treatment for Acanthamoeba keratitis.

Keywords
Amoebicidal

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Legal Studies

In Depth Study on Legal Issues and Opinions in Legalizing Euthanasia in Sri Lanka - Abstract for the BCAS Annual Research Symposium

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Abstract

Euthanasia has been a sensitive topic for decades due to several reasons contributing to the air of hostility towards legalising euthanasia. The biggest hindrance to legalising euthanasia is derived from public ignorance of euthanasia or due to the prejudice on euthanasia. This research explores the arguments of pro-life and pro-choice supporters. Pro-life and pro-choice arguments despite being conflicting supports the notion that people should not be exploited. There are existing practices in medicine allows for exploitation of individuals and the alternative practices to euthanasia are ineffective in application. This shows need to legalise certain forms euthanasia in Sri Lanka after assessing the various forms. There are some countries in world which has legalized certain forms of euthanasia and they are discovering and implementing different checks and balances to ensure that the law is not abused. The research draws on techniques and policies to propose the legalization of certain types of euthanasia in Sri Lanka. If an ordinary citizen euthanizes another person, the Penal Code of Sri Lanka holds them liable for their crime despite their noble intent. However, the medical practitioners are given discretionary power to undertake involuntary and passive euthanasia under certain conditions. This practice in Sri Lanka can be regulated if only, there are proper laws and guidelines for euthanasia. However, the legalization of euthanasia in Sri Lanka is influenced by the views of the country's citizens, therefore the views of Sri Lankan on euthanasia is obtained through a survey and analysed with reference to the human rights perspective.

Keywords
Euthanasia, Human Rights, Legal Instruments, Sri Lanka.

Introduction
In early days, Euthanasia means 'good death' and was derived from Greek. However, it was developed to include the practice of intentionally ending a life to relieve unbearable pain (mercy killing). Legalising euthanasia is important because it is a grey area in law which that policy makers have to rectify. Medical practitioners use certain forms of euthanasia as good medical practice which is in contradiction to the Hippocratic Oath of doctors as well as the fundamental right of life in the country. However, pro-life supporters do not see the malpractice and issues. Thereby, they worry that legalising euthanasia will serve as a tool to help people get rid of people. But, this is a slippery slope argument that is fueled by the religious belief; killing another human being is a sin. Pro-life supporters advocate that legalizing euthanasia will corrode the Sanctity of life whereby people's fundamental right to life will be violated. However, the pro-choice supporters argue for the legalisation of euthanasia to ensure that people can die with dignity which gives them some degree of autonomy. Moreover, in certain situations,

euthanasia is a compassionate and merciful choice than to let the people live a life where there is no quality to their life. It is true that law legalising euthanasia can be abused. But, legalizing euthanasia is the only method to control and set limits to the already existing practice and enable other practice in future. The research took a mixed approach in analyzing the issue.

Experimental finding - Survey

The cross sectional quantitative study was conducted using survey method where the notion whether there is a significant support for legalizing euthanasia in Sri Lanka was surveyed. The sample size n was hundred participants with 47 females and 53 males. These subjects were diverse in their age, educational qualification, work experience, religious belief and around 53% of them were present at the bedside of someone who was dying. These demographic information shows the generalizability and other qualities of the sample. Out of this around 41% sample clearly agreed that people should have to right to die and only 32% disagreed, the rest were either neutral or were undecided. The participants were asked their opinions on suicide and euthanasia for different situations and people were compliant to administer euthanasia if they were terminally ill or in similar dire situations which shows people's acceptance to voluntary euthanasia and/or passive euthanasia. It should be noted that the approval rating for administering euthanasia for self was higher than for their loved ones. It was theorised that due to the pro-life arguments taught and embedded in Sri Lankans through religions and other forums, it is harder for us to let someone die without fighting for their life. However, towards the end, around 52% of the sample agreed that euthanasia should be legalised with limitations and only 16% of the sample disapproved and 42% were undecided or neutral because they were unable to choose one side without clear boundaries set down. This shows that people are not hard to reason with and legalizing euthanasia will help stop people who are already exploiting the lawless state in Sri Lanka in regards to euthanasia.

Conclusion

In conclusion, there is an immense support for legalising euthanasia with limitations in Sri Lanka as long as there is proper system in place to periodically check that there is no abuse or malpractice. However, it is impossible to legalise euthanasia overnight whereby government will have to allocate funds for end of life care and palliative or hospice care for people who are terminally ill or have some requirements. In addition to that, the freedom given to the medical practitioners should be minimised to ensure that there is no abuse of power.

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Laws Relating to Divorce, Maintenance in Sri Lanka - Abstract for the BCAS Annual Research Symposium

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Abstract

Subject of marriage and divorce is an interesting topic in the legal system of Sri Lanka which is a mixed legal system .It is influenced by Roman Dutch law and English legal principles.Sri Lankan legal system comprise of three personal laws as Kandyan law, Thesawalami law and Muslim law. These sources have contributed to the development of modern law in Sri Lanka. Therefore the law on marriage, divorce and maintenance is an amalgamation of these sources which is developed in a manner suitable to the Sri Lankan social conditions.In Sri Lanka divorce and separation are relatively on the increase.This research draws attention on the key aspects of the Divorce and maintenance law of Sri Lanka.In relation to the matters heard at District courts .Depicts t the present family unit has more problems unlike the past.Research paper discuss on the matters that have destructed the unity of the family and the practical situations and the law applicable on such matters. Sri Lanka is a multi-religions and multi-cultural and having customary laws in its legal system apart from the general law principles.Laws governing the divorce and maintenance and the social impact on the subject matter is analyzed.The article investigates the impact of social changes on durability of marriages and matters arise in the payment of maintenance to the spouse. This research is heavily relied on the case laws and the online articles and books written on the subject matter.

Family law consists of body of statutes and case precedents that govern the legal responsibilities between individuals who share a domestic connection. These cases usually involve parties who are related by blood or marriage, but family law can affect those in more distant or casual relationships as well. Due to the emotionally-charged nature of most family law cases, litigants are strongly advised to retain legal counsel. The vast majority of family law proceedings come about as a result of the termination of a marriage. This results in consequent actions such as, action for separation or divorce, maintenance, and with regard to child custody, visitation, and support.

In the research in depth analysis shall be made to the general law of Sri Lanka and also to the customary laws of Sri Lanka with regard to divorce and maintenance. Further analysis will be done on the social impact on these two areas of law and recommendation shall be proposed by applying the other jurisdictions in the world. The law cares exceptionally with regard to ending the marriage. Several barriers are setup and that two people cannot end their marriage on their own consent. Instead, the law hands over the decision to judge. It is not enough that the law take away the right of individuals to decide that they want to end the relationship ;the two individuals are also pitted against each other by imposing divorce proceedings as an adversarial contest. This unreasonably complicates a difficulty to obtain divorce, frequently disturbing personal and social experience com each other. It is amazing that those who get married are unaware of the process involved in getting out of the marriage.

As the good character is expected from women than that of men .In order to avoid the agony to experience of obtain the divorce in many circumstances 'uncontested' divorce take place. This is where spouses, agree that one will file the case and the other will not contest it, thereby the judge is compelled to grant the divorce on the basis that basic grounds for divorce are technically satisfied. To ensure that there is no dispute, the least offensive ground of divorce that is 'malicious desertion' is generally suggested.

Law reforms are needed in the area of divorce such as making it easier to divorce, relaxation to the strict procedure the instance both parties mutually agree. However there is a possibility that this system will lead to more divorces; divorces reflect a broken society that has failed to keep the body of marriage unharmed the simple response is that our society has failed to encourage meaningful relationships. Strict divorce procedures have add an element of violent behavior in a relationship that has already tattered. It does nothing to help individuals restore their relationship, but fosters fear, hatred, anger and bitterness. If, as a society, we are truly interested in fostering meaningful relationships, current system needs to be amended. Education system needs to modified by introducing strong communication skills, such as respect and equality between genders, pre-marital programs, providing and popularizing opportunities for counseling and working on relationships is probably where our attention should be placed. Instead, we are forcing people within a marriage to stay together without creating any means to help them out of a difficult situation.

Introducing the concept of matrimonial courts is a timely requirement which was once proposed, however, the proposals were never adopted. There are some lacunas that can be identified in the laws of Sri Lanka with regard to divorce and maintenance. It is necessary to provide and include new provisions to the laws governing these two areas. When adding new provisions it is necessary and important to consider the legal and social system of Sri Lanka. Any amendment to the legislation shall be done only by obtaining the majority of votes at the Parliament. This process involve a long procedure. With the advancement of technology and developments that have taken place in the society it is necessary to amend the legislature which is suitable to the 21st century.

Keywords
Family law, Grounds for Divorce, Customary laws,Maintenance

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A Critical Analysis on Laws Governing Abortion in Sri Lanka and England

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Abstract

Abortion is probably the most controversial subject in modern society which includes number of complex questions concerning ethical, moral, legal, medical, religious, human rights issues related to the deliberate ending of pregnancy before normal childbirth. When considering about the medical definition for abortion which can define as, as termination of pregnancy define as the removal of an embryo or fetus from the uterus at the stage of pregnancy when it is deemed incapable of independent survival.

As per jurisdiction which stated in Section 303 of the Penal Code of Sri Lanka provided that abortion is only indicating legal when the life of the mother in threat. As per the law provide on the Penal Code of Sri Lanka stated that abortion as a criminal offence where the abortion occurred though a voluntary rather being a miscarriage and further stated that it may be punishable under the s.303 of the Penal Code. According to s. 304 of the Penal Code of Sri Lanka further stated that, in case of death of such women, the person performing an illegal abortion shall be punishable with imprisonment up to 20 years.

Due to lack of legalized abortion grounds in Sri Lanka high percentage of women undergo backstreet abortionists for contained unsafe abortions and caused various health issues which amount to violation of rights of the women and women's reproductive health access. When concerning about the main factors for women undergo for an unsafe abortion, such as due to lack of having family planning, unexpected pregnancy, and also in present context percentage of teenage pregnancy increase largely due to having lack of sexual education among teenagers and etc.

Due to such lack of awareness women undergo for unsafe abortion; annually 400,000 Sri Lankan women become pregnant of whom 658 abortions are performed on a daily basis. As per Dr, Dissanayaka 10 to 12 percent of maternal deaths occur in Sri Lanka due to the complication such as excessive bleeding and infections after unsafe abortions. Therefore, it is essential for legalization of abortion up to some extent to preserve women life in favor of allowing abortion for rape, incest and fetus abnormalities.

Pregnant women who undergo for abortion though illegal basis which is contrary to the laws of the state occurred with the minimum standard such as, not with the qualified physicians, not with the qualified team and also the equipment's which used to perform abortion caused to damages to reproductive organs and other organs due to abortion conduct by unqualified abortionist and it occur various physical consequences to the women who undergo abortion such as, haemorrhage, septicaemia, vacigust, gasgangrene, air embolism, sope embolism or both soap and air embolism and also long term consequences. To prevent unwanted pregnancies and have to access safe abortions countries must make sufficient legal frameworks with supportive policies and financial commitments to provide comprehensive

sexual education, accurate family planning counselling and access to safe.

There are several attempts taken to legalization of abortion in past ten years In 2011 by the Sri Lanka Collage of Obstetricians and Gynecologists further stated the essentialness of legalization of abortion up to some extend rather going illegal and unsafe abortion process but it also amounts to fail due to pressure from the groups such as religious leaders. And also in 2011 the National Action Plan for Human Right included to legalization of abortion to decriminalize abortion for rape and major congenital abnormalities. In 2013 Law Commission proposals called for legislation in case of rape and foetal impairments which is also consist as an unsuccessful and failed proposal for legalizing abortion up to some extend to prevent unsafe abortion and to constitute certain relief to the innocent young girls who have being rape or incest. Recently, Justice Aluvihare though a special committee to allow abortion in cases of rape and incest. Pregnancy in a girl below 16 and with serious foetal impairment. However the drafting of the Bill was put on hold because of the President Maithripala Sirisena wants consult with religious leaders, who showed strong deprecate regarding the reform.

In the sense of law women's right to choose linked between women's health and human rights. To decriminalized abortion and allow for medical termination of pregnancy in the specific circumstances such as, rape and incest, when the pregnancy occurring in a girl below the age of sixteen, serious foetal impairments or deformities. By concerning women's right to choose, up to 12 weeks' compromise to be reach abortion in legal consequences though the new amendment to prevent unsafe abortion which amount to cause deaths, physical and mental consists which occurred to women who undergo unsafe abortion though backstreet abortionists.

When concerning about the abortion law of England, in 1803 England constituted "Miscarriage of Women Act" and stated that if such person aborts the pre-quickening may ordain capital punishment. But in 1837 by amending "Miscarriage of Women Act" consider that, pre-quickening not consist upon capital punishment but further stated as an offence. In 1967 Abortion Laws further simplify which was passed as an Act of the parliament though as a private members' bill. As per Abortion Law 1967 in England abortion is legalized, but under certain conditions.

Abortion is largely increase among teenagers due to lack of knowledge regarding the sexual education for the teenagers and also rest of majority of abortions in the country are taken by married women due to unexpected pregnancy because of that such women do not have sufficient family planning knowledge. By referring these two reasons it is essential to provide sufficient knowledge for the general public and for school students rather being undergo unsafe and illegal abortions.

Objectives of this paper was broadly discuss about the causes for abortion and critically analyze risk factors and medical background for abortion, to identify up to which extend abortion should be legalized to have safe abortions, to critically analyze about the laws relating to abortion in United Kingdom and jurisdiction. In the research more is relied on the secondary sources such as books, articles and journals.

Keywords

Legalization of abortion, Sri Lanka & United Kingdom, reasons risk factors and causes, religious opposition

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Debating the Death Penalty; to kill or not to kill…

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Abstract

The purpose of this study was to investigate the implementation of capital punishment and to identify the effects it would have on society and its people in the Sri Lankan context. Data was collected on the opinions and attitudes people had towards the practice of the death penalty and on the crimes and punishments in a society. The research report concludes that the re-introduction of the death penalty would discourage crimes in the future and should be carried out for those convicts already given the death sentence if deterrence or retribution is to be achieved.

Introduction

Death penalty, also known as capital punishment is authorized by a government. It is a practice that executes a person as punishment for a crime. It is considered the most severe of punishments as it is final and irrevocable. Offences of a serious nature, especially murder, and war crimes, genocide, etc. are punishable by death and are regarded as capital crimes. Since the period of ancient Kings to after the British rule, the death penalty has been recognized in Sri Lanka as a form of punishment. For a country that emerged from the destructions of a 30 year civil war only 8 years ago, Sri Lanka has been making headlines with a soaring crime rate. The worst of the rapes, child abuses, murders and even drug trafficking have taken place in the past few years, which has called on the re-instatement of the capital punishment, which although part of the jurisprudence in Sri Lanka has not been practiced since 1976 in the country.

In Sri Lanka the Penal Code governs capital punishment and it states the crimes that would be punished by death if committed. For murder and military offences not resulting in death, the death sentence is regarded as mandatory. Yet, the country has not seen an execution after that of J. M. Chandradasa convicted for murder almost three decades ago. Instead, the death sentences have been eventually commuted to life imprisonment since. The gruesome and unbelievable crimes that's been happening in the recent past, has created a dilemma in the minds of people pressurizing them to wonder if it's time to implement the death penalty – despite their religious beliefs holding an opposing view.

The overall aim of this study was to investigate into the implementation of the death penalty in order to identify its effect on society and crimes, and to assess how applicable it is to implement capital punishment. The intention of punishment is for retribution, deterrence, and incapacitation and reformation. The purpose of this study was to identify if the death penalty can help achieve all of these objectives and make the public aware of it. Murders, rapists and serial killers not born as such but are made and therefore in most circumstances can be unmade.

Experimental

15 questionnaires were distributed among 16-29 year olds grouped category 1, and 18 questionnaires were distributed among people aged 30 and above grouped category 2. All questionnaires were answered and returned, and used for interpretation. 60% of the questionnaires given to 16 – 29 year olds were answered by female respondents, and 40% by male respondents. From the 18 questionnaires responded by people above the age of 30, 61.1% were female and 38.89% were male. The researcher had distributed the questionnaires to two age categories to find out if the responses between older people and youngsters were similar or whether the death penalty is viewed differently among these people.

Compared to the general opinions gathered through questionnaires, the researcher was able to get an understanding of the study problem more comprehensively from qualitative data. This aspect of the research was done by conducting interviews. The views were collected from 4 individuals; a Criminal Lawyer, a retired Chief Welfare Officer at prison, a relative of a murder victim and a man convicted of murder and released. The interviews were brief and consisted of 12-15 questions regarding the subject's views and opinions on the death penalty, and suitable punishments for crimes in Sri Lanka.

This research concludes that it is the strong belief of the public that re-introducing the death penalty will discourage future crimes by inducing fear in would-be criminals. In spite of human rights activists and organizations asking to abolish the death penalty, it needs to be implemented for the atrocious crimes that happen in the country, not just crimes recognized on international standards because if a man commits an outrageous crime it proves his intention to cause harm to a person/s unless he has a substance abuse problem.

It is recommended that the criminal justice system of the country and laws be improved and revised and immediate decisions be made regarding the convicts facing the death penalty for the purpose of deterrence, retribution or even rehabilitation.

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Right to Life: It's Inclusion into the Fundamental Rights Chapter of the Constitution of Sri Lanka

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Introduction

It is believed that life is given to every human by God and that life must be respected by every human being. The right to life is a moral principle based on the belief that a human being has the right to live and, in particular, should not be killed by another human being. The concept of a right to life arises in debates on issues of capital punishment, war, abortion, euthanasia, justifiable homicide, animal welfare and public health care.

Various individuals who identify with pro-life views may disagree on which areas this principle applies, such as issues previously listed. In human history, there has not been a general acceptance of the concept of a right to life that is innate to all human beings rather than granted as a privilege by those holding social and political power. The evolution of human rights as a concept took place slowly in multiple areas in many different ways, with the right to life being no exception to this trend, and the past millennium in particular has seen a large set of national and international law or legal documents (examples being the Magna Carta and the Universal Declaration of Human Rights) codifying the general ideal into specifically worded principles.

Clearly a constitution is an aggregate of fundamental principles or established precedents that collectively constitute the legal basis of a polity, organisation or other type of entity. And commonly determine how that entity is to be governed. However, when we delve into the constitution of Sri Lanka, we come to realise that it does not state anything about Right to Life. Neither the 1972 constitution nor the 1978 constitution acknowledges Right to Life. For a country that emerged from the destructions of a 30 year civil war only 8 years ago, Sri Lanka has been making headlines with a soaring crime rate. The worst of the rapes, child abuses, murders and even drug trafficking have taken place in the past few years.

Later cases as well as several philosophers have emphasised the importance of Right to Life. Pope Francis said "The Right to Life is the first among Human Rights". South African activist and the former president, Nelson Mandela stated that "When a man is denied the right to live the life he believes in, he has no choice but to become an outlaw".

The Universal declaration of Human Rights (UDHR) is a milestone document in the history of human rights. It sets out, for the first time, fundamental human rights to be universally protected and it has been translated into over 500 languages. The preamble goes like "recognition of the inherent dignity and of the equal and inalienable rights of all members of the human family is the foundation of freedom, justice and peace in the world". Furthermore, Article 3 of the UDHR states "Everyone has the right to life, liberty and security of person". As we can clearly see, Right to life is expressly recognised in the UDHR.

Out of the 197 countries in the world, 193 countries have ratified the UDHR. And the 1978 constitution of Sri Lanka has a separate fundamental rights chapter which addresses certain rights mentioned in the UDHR. Even though Sri Lanka is one of the 193 countries which has ratified the UDHR, being a dualist country, the Sri Lankan constitution doesn't expressly recognise the Right to life. Nevertheless, it is the fundamental rights chapter which impliedly recognises the right to life through the articles. Justice Fernando observed "although the right to life is not expressly recognised in the Constitution, it is impliedly recognised in some of the FR provisions, most notably Article 13(4) which states that no person shall be punished with death or imprisonment except by order of a competent court."

Experimental

Nonetheless, the fact that right to life is merely implied through several other articles and is not expressly recognised is still a hitch in the constitution of Sri Lanka. Only elite legal professions and literate men would understand the implied recognition of Right to life. However, every citizen of a country is supposed to know what rights they have and what rights they don't. But how far the general public is aware of it is still a question.

Therefore, the purpose of this study was to investigate the response to the suggestion of inclusion of Right to life to the Fundamental rights chapter in the Sri Lankan constitution and to identify the effects it would have on the society and its people. Data was collected on the opinions and attitudes of people who are in the legal sector and from a selected crowd in the general public. This was done by distribution of questionnaires to twenty people between the age of 16-25 and ten people aged 26 and above and through interviews conducted with a criminal lawyer, a teacher, a justice of peace and an acting judge. The results indicate that the majority of the public strongly agree to the fact that right to life must be included in the constitution of Sri Lanka as a fundamental right. The research report concludes that Right to life must be included in the constitution of Sri Lanka as a fundamental Right. However, this inclusion must be done by restricting certain factors and making sure that the codification doesn't end up in creating loopholes. It is recommended that as Sri Lanka is a developing country, small steps from now on, must be taken to create a better state.

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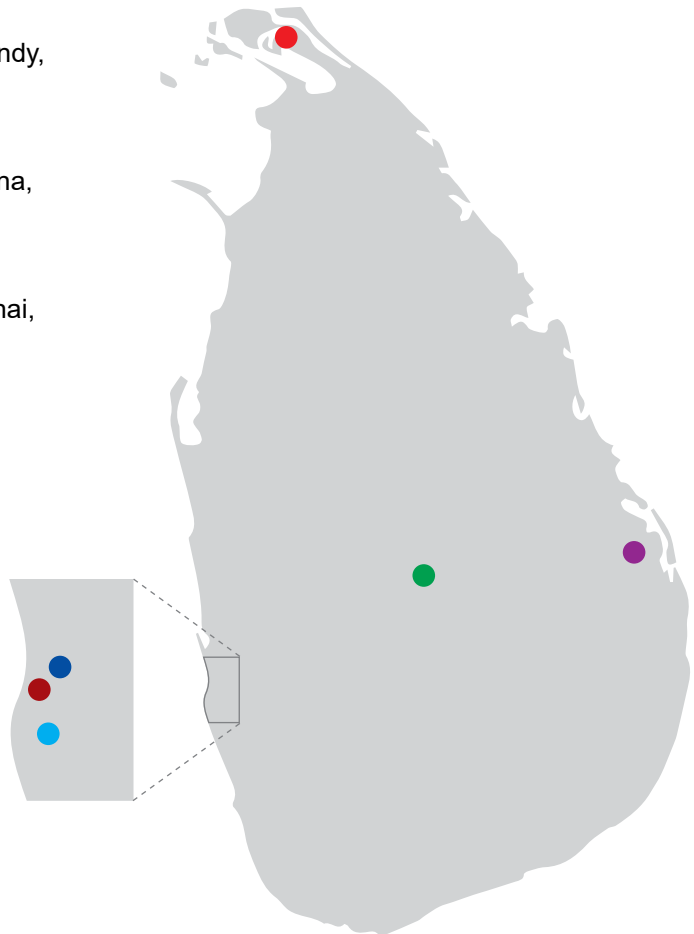
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BCAS ANNUAL RESEARCH SYMPOSIUM 2019 - GLANCE PROGRAMME

TIME	PROGRAMMES		
9.00 – 9.30	Registration and Tea		
9.30 – 11.00	Inauguration		
TIME	**Session – 1**	**Session – 2**	
11.00 – 11.15	Identifying the best algorithm in predicting the possibilities of having diabetes by using given symptoms	Recognition of Medicinal plants along with the medicinal value-based on the shape of the leaf.	
	Mr. Shri Wathsan, Ms. F. Menal Muzammil	T.C.K Rangamaarachchi	
11.15 – 11.30	Analyze and Find the best Face Recognition Algorithm for Credit Card Security	Study of face recognition algorithms to conclude on the optimal algorithms that is featured by artificial intelligence	
	G. Arunath, M.F.M Failas	K. Dhilshan, M.Ameerah	
11.30 – 11.45	Analyzing and predicting the future results of high school students using AI	Smart Back pack: To aware the unfavorable weight of back-pack	
	Dhilshan Karthigeyan, M.F Shafiya	T.C.K Rangamaarachchi and Mohamed Nishaz	
11.45 – 12.00	Brief History on Natural Language Processing and Evaluating the Effectiveness of Text Classifiers Created Using Machine Learning	Study of how deforestation can be identified through artificially intelligent audio finger printing technique	
	G.Arunath, S.M.V Dilshan	K. Dhilshan, D.Amshathwan	
12.00 – 12.15	Comparative Analysis of Machine Learning Algorithm for Predicting Heart Diseases	Study on effectiveness of Business Intelligence tools in decision making process within Educational organization.	
	A. Jayawardana1, W.B.P.K. Roshan2	G. Arunath, N.M. Naashif	
12.15 – 12.30	Comparative Evaluation of Impacts on using smart shopping systems in supermarkets.	how deforestation can be identified through Artificially Intelligent image processing technique	
	S.H.M Shafeer, M.N.M Sajith	K. Dhilshan, M.Hisham	
12.30 – 2.00	Lunch		
2.30 – 3.00	Keynote -		

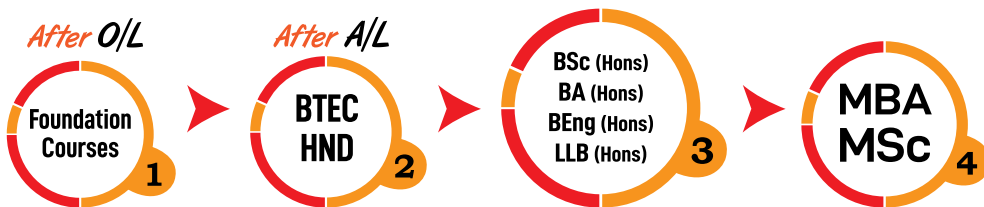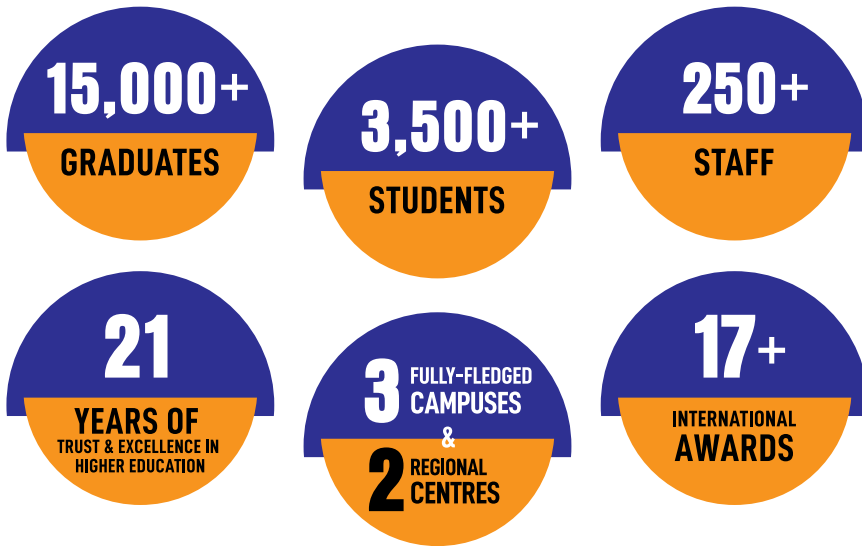| Session – 3	Session – 3
Influence of Electronic Word of Mouth in Social Media on Undergraduates' Purchase Intentions. A South Eastern University of Sri Lanka's Perspective	In Vitro Evaluation of the Inhibitory Effect of Topical Ophthalmic Agents on Acanthamoeba Viability
Ms.MJ. Fathima Rifna, & Mr.S. Sabraz Nawaz	W. Heaselgrave
Impact of Dividend Policy on Share Prices of Listed Companies in Sri Lanka: Special Reference to Banks Finance and Insurance Sector.	Antioxidant activity of Salicornia brachiata
Mohamed Jamaldeen Fathima Inshira	A Thasmila
Impacts of Human Resources Management System on Organizational Performance. A Case Study Based on the Banking Sector in Ampara District.	Understand and analyze how the organizational culture, power politics and motivation influences worker performance
A. Fathima Nuskiya	Ashmila De Cruiz
The Effects of Globalization on Marketing Mix Strategy and Performance of Hardware Industry in Sri Lanka.	In Depth Study on Issues and Opinions in Legalizing Euthanasia in Sri Lanka
A. Fathima Nuskiya1, MI. Mohamed Ifham2	K. G. Pushparajah1, M. Baranage2
An investigation on impact of Brand Awareness on Customer Purchasing Decision in Local Restaurants: A case study on Bakes by Bella and Flamingo House	Laws Relating to Divorce, Maintenance in Sri Lanka
D. M. Selvam	Y Weerasinghe1, M Baranage2
Critically investigate the challenges of integrating emerging technologies within organization Kanrich Finance under the theme impact of digitalization on business activities	A Critical Analysis on Laws Governing Abortion in Sri Lanka and United Kingdom
Priyadharshani Jeyasundaram	S. Ranathunga 1, M. Baranage 2

BCAS ANNUAL RESEARCH SYMPOSIUM 2019 - GLANCE PROGRAMME

TIME	Session – 1	Session – 2	
3.00 – 3.15	Using Machine learning to stop Distributed Denial of Service with the help of Artificial Intelligence	Using Artificial Intelligence in Web development to increase Efficiency	
	M. Shri Wathsan, Nuhman Ammar	Mr. Mohamed Nuzrath, Mr. A.H.M Humaid	
3.15 – 3.30	Identify and implement the best artificial intelligence algorithm to detect objects in a set of video sequences.	Using Machine Learning techniques to predict fuel consumption of a vehicle.	
	K. Dhilshan, M.Z.F.Nazrin	K. Dhilshan, Aaqil Ahamed, Arunath	
3.30 – 3.45	Network traffic load balancing by Separating network Protocols	Factors influencing the adoption of information and communication technology into teaching: An Empirical Study Based on Primary Schools in Ampara District	
	S.H.M Shafeer, M.F.M Fazlan	Mohamed Rifan Fathima Sajidha	
3.45 – 4.00	POSSIBILITY OF EXPLOITING IOT DEVICES TO EXECUTE AUTONOMOUS CYBER-ATTACKS	Shaping HND in Computing Students for Employability in light of SLASSCOM's Survey on Employability Skills: Reference to BCAS Campus	
	Mr. Shri Wathsan, Mr. B.M.S.R.Bandara	Ahamed Rameez Mohamed Nizzad	
4.00 – 4.15	Possibilities of cyber security breaches (Phishing attack) when using social media (Facebook) at investment companies in Ampara district	Facial Expression based Real-Time Feeling Detection System	
	K. Mohamed Ishraque	Kunaratnam Kunarakulan[1], Ahamed Rameez Mohamed Nizzad[2]	
4.15 – 4.30	Design and Construction of IoT based Smart Home Electricity Assistant	Application of 'Machine Learning Technique' for the Immunization Schedule for EPI Vaccines – Sri Lanka	
	M.Suganja, & S.Jeyaram	H.O Fonseka	
4.30 – 5.00	Keynote -		
5.00 – 5.30	Closing and Tea		

	Session – 3	Session – 3
	Globalization in small and medium enterprises	Investigate the response to the suggestion of inclusion of Right to life to the Fundamental rights chapter in the Sri Lankan constitution and to identify the effects it would have on the society and its people
	Udayakumaran Kishora	Hasheefa Faze
	Impact of globalization on small and medium enterprises abstract for the BCAS Annual Research Symposium.	Debating the Death Penalty
	M.N.M Zahir	Salmah Kaleel
	Organizational Cultures and Workforce Motivation	abstract for A Study of Feasibility to use Paddy Husk Ash as a Cement Supplementary Material for Concrete in Sri Lanka.
	Udayakumaran Kishora	AMM Aslam Shimar1, & ACM Suhoothi2
	Impact of globalization on small and medium enterprises	Contribution of Road projects to develop a social, cultural and digital economy of the country. -A study on Colombo-Katunayake expressway.
	L.Dullewe	M.A. MUSHARRAFF, T. VIDHURSHAN, J.M.RUSLAN
	Scrutinize the influence organizational culture and motivation has upon behaviors and performance within the workplace Smart Shirts	FEASIBILITY OF OFF-SITE MODULAR BUILDING IN SRI LANKA
	Priyadharshani Jeyasundaram	Arulpragasam Jayshanth
	EFFECTS OF DIGITAL TECHNOLOGY IN BUSINESS ACTIVITY THE IMPACT OF DIGITAL TECHNOLOGY IN SUPPORTING SMALL BUSINESS GROWTH AND INNOVATION	To Discover How Ecommerce Drives Business Success
	D. S. Michaela Balendra	Darshana Udalagama

Notes

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