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5th International Conference on Recent Trends in Computer Science and Electronics

January 7-9, 2020

University of Hawaii, USA

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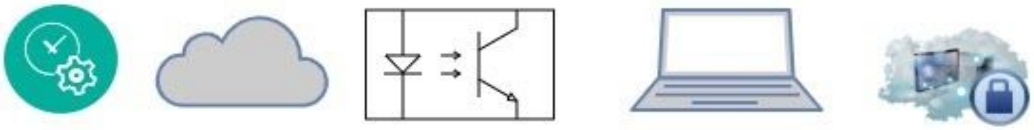

Organizer

Gyancity Research Lab, India

University of Hawaii, USA

Gyancity Research Consultancy

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About RTCSE'2020

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RTCSE'19 Group Photo

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Chair Message

As a chair I have the honor to welcome you with great respect and enthusiasm to the 5th International Conference on Recent Trends in Computer Science and Electronics Engineering (RTCSE'2020) to be held at the University of Hawaii, USA on 07 – 09 January 2020. RTCSE'2020 intended to attract innovative technical and scientific work in the field of computer science and electronics engineering. The response to the conference was overwhelming and I am proud to state that we have received really good quality contributions and I am sure as a participant you will share the same sentiment. All accepted papers will be submitted to Scopus/Thomson Reuters/Springer/Crossref Index Journals (see list on conference website) and hopefully these papers will be available online by middle of 2020.

As a chair and on behalf of the organizing committee I sincerely hope that RTCSE'2020 will offer a great venue at Hawaii to the participants coming from different parts of the world to share and contribute in the areas of their expertise. We hope to provide a good platform to the participants of RTCSE'2020 where not only they meet and share their vision, ideas but also fertilize their thoughts in the ever-growing area of computer science and electronics engineering technologies. I am also confident that our keynote speakers will be able to enrich your knowledge during the conference and I wish you a very pleasant and enjoyable stay in Hawaii, USA.

It is the 11th conference hosted by Gyancity Research Lab, there are two more in 2020:
3rd International Multi-Topic Conference on Engineering and Science (IMCES) 27-29 May 2020 Faculty of Information Technology, Universitas YARSI, Jakarta, Indonesia
http://imces.tech/

6th International Conference on Green Computing and Engineering Technologies (ICGCET®) 16 Sep - 18 Sep 2020 Herzen State Pedagogical University of Russia, St Petersburg, Russia
https://icgcet.org/

Best wishes.

Prof Jason Levy
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RTCSE'2020 Schedule

7th January 2020	
Video Presentation	Available 24x7 on YouTube Channel of Gyancity Research Lab: https://www.youtube.com/channel/UCHtdIuXB1evhmQb3zQ82uCA Paper Id: 11, 41, 44, 57, 59, 71, 72, 73, 78, 86, 93, 107, 108
Satellite Skype Sessions	Venue: The Oxford College of Engineering, India Indian Time: 8th January 9.00 AM Hawaii USA Time: 7th January 5.30 PM Paper Id: 13, 14, 15, 16, 18, 43, 44, 84, 85, 102 Chair: Prof Preeta Sharan, The Oxford College of Engineering, India

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RTCSE 8th January 2020	
9:30-10:00 AM	Reporting at Registration Desk
10:00-10:30 AM	**Conference Welcome** by **Jason Levy and Richard Frost and Qian Zhang and Derek Walker**
10:30-10:45 AM	**Conference Dedication** **Ray Kahoone Jr. "Eddie would go to RTCSE 2020"**
10:45-12:30 AM	Session 1 Presentations: Chair: Jose De Leon, University of Hawaii Location: Room 105, University of Hawai'i, Manoa 2520 Correa Road, IT Center, Honolulu, HI 96822 **Ciro Rodriguez (10:45-11:45)** ● Real Time Facial Expression Recognition System Based on Deep Learning ● Convolutional Neural Networks Model in Premature Detection of Melanoma ● Configuration Management of information systems in Peruvian Government organizations ● Fuzzy Optimization Model for post harvest selection process of Pecan (Carya illinoinensis) **Doris Esenarro (11:45-12:15)** ● Hyper Converged Systems Applied (HSA) Methodology to Optimize the Process of Technological Renewal in Data Centers ● Improvement of Academic Performance of Engineering Students through an Adaptive Educational Hypermedia System (AEHS) **Frank Morlang (12:15-12:30)** ● Supersonic and hypersonic flightdynamics realization for the SpaceLinerreal-time Human-in-the-Loop SpaceFlight Simulator

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12:30-13:30 PM	**LUNCH**
13:30-14:00 PM	**Keynote: on Internet Technology and Secured Transactions by PROF NAVEEN CHILAMKURTI Department of Computer Science, La Trobe University, Melbourne, Australia.**
14:00-16:00 PM	Session 2 Presentations Chair: ROF NAVEEN CHILAMKURTI Department of Computer Science, La Trobe University, Melbourne, Australia Location: Room 105, University of Hawai'i, Manoa 2520 Correa Road, IT Center, Honolulu, HI 96822 **Vladimir Ivanov** Using AR technologies in medical visualization **Taishi Nemoto** Design for Group MessengerIncorporating Concept of "Three WiseMonkeys" **Ziran Fan** Digital application of analog-like time perception mechanism based onAnalog on Digital (AoD) theory **Kazuhiro Morita** A classification method of the incident by extraction from text **Kazuya Morata** Proposal for Social Environment System by Low-Cost Computing **Anil Seker** Instruction Set Extension of Nios II for Floating-Point HOG Description and Implementation on an FPGA
16:00-16:20 PM	General Chair **Prof Jason Levy** will honor all the participants with a Presentation Certificate

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Abstract of Paper Accepted in RTCSE'2020

3

Supersonic and hypersonic flight dynamics realization for the SpaceLiner real-time Human-in-the-Loop Space Flight Simulator

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Abstract

DLR's advanced concept for suborbital, hypersonic, winged passenger transport called SpaceLiner, revolutionizing ultra-long distance travel, has been chosen as a use case for the testing and evaluation of procedures and functionalities for an improved handling of space vehicle operation. To adapt the real-time Human-in-the-Loop Space Flight Simulator to this use case, a SpaceLiner simulation model has been developed by geometry modeled flight dynamics for the commercial flight simulation software "X-Plane". Although compressible flow effects are considered using Prandtl-Glauert, the SpaceLiner X-Plane simulation model needed deeper investigation in its transonic and supersonic behavior, taking into account that transonic effects in X-Plane only refer to an empirical mach-divergent drag increase and the airfoil becomes an appropriate thickness ratio diamond shape under supersonic conditions. The presented solution is based on a real-time flight dynamics corrector application, taking table based aerodynamic coefficients from Computational Fluid Dynamics (CFD) model experiments to overwrite X-Plane's internal flight dynamics in the supersonic and hypersonic regime.

Keywords: spacecraft, real-time human-in-the-loop simulation, hypersonic

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Abstract of Paper Accepted in RTCSE'2020

11

Error estimation of bilinear Galerkin finite element method for 2D thermal problems

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Abstract

This study demonstrates a two-dimensional steady state heat conduction Laplace partial differential equation solution using the bilinear Galerkin finite element method. Heat transfer analysis is of vital importance in many engineering applications and devising computationally inexpensive numerical methods while maintaining accuracy is one of the primary concerns. The method uses structured mesh grid over a two-dimensional rectangular domain and solved using a stiffness matrix for the bilinear elements, calculated using the proposed modified numerical scheme. Several numerical experiments are conducted by controlling the number of nodes and changing element sizes of the presented scheme, and comparison made between analytical solution and software generated solution.

Keywords: Galerkin method, bilinear element, heat conduction, error analysis, partial differential equation

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Abstract of Paper Accepted in RTCSE'2020

12

Design of Energy Efficient Control Unit and Implementation on High Performance FPGA

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Abstract

With the crisis of power across the globe, green communication and power-efficient devices are getting more and more attention. This work emphasis about the implementation of Control Unit (CU) circuit on Field Programmable Gate Array (FPGA) kit. In this work, power consumption of CU circuit is analyzed by changing the different Input/Output (I/O) standards of FPGA. This work is performed on Xilinx 14.1 ISE Design Suite and the power consumption on CU is calculated with X Power Analyzer tool on 28-Nano-Meter (nm) Artix-7 FPGA. Out of different I/O standards, CU circuit is most power efficient with Low Voltage Complementary Metal Oxide Semiconductor 15 (LVCMOS15) I/O standard on Artix-7 FPGA.

Keywords: *Control Unit, I/O standard, LVCMOS, FPGA.*

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Abstract of Paper Accepted in RTCSE'2020

13

Models of Leadership in Information Technology Projects

[1]Yousef A.Baker El-Ebiary, [2]Waheeb Abu-Ulbeh, [3]Ahmed Hassan Hassan, [4*]M. Hafiz Yusoff, [5]Seita Almandeel, [6]Bishwajeet Pandey

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Abstract

This paper discusses an empirical research aimed at identifying successful leadership styles for managers of Information Technology/Systems projects. The research examined the suitability of transformational leadership in conjunction with other critical success factors. The results indicated that a combination of transformational and technical leadership behaviours augment the electiveness of transactional leadership leading to high project success. While recognising that there is no one leadership style that is elective in all project situations, the study recommends an underlying yet flexible style characterised by organisational catalyst, intellectual stimulation, behavioural charisma, and contingent reward behaviours for enhanced leadership electiveness.

Keywords: Information Systems, Technology Projects, Technical leadership, Transformational leadership, IT project ,Critical success factors

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Abstract of Paper Accepted in RTCSE'2020

14

Technology and Leadership Styles - Level of leadership competence of educational leaders

[1]Seita Almandeel [2]Yousef A.Baker El-Ebiary, [3]Ahmed Hassan Hassan, [4]Waheeb Abu-Ulbeh, [5*]M. Hafiz Yusoff, [6]Bishwajeet Pandey

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Abstract

Researchers have studied the leadership styles of educational leaders in connection with their level of computer use and success in integration of ICT. This study aims to reveal if the leadership style can be a predictor of competent technology leaders. The importance of this study is to investigate the leaders' competency as technology leaders rather than level of perceived use of technology, using Technology Leadership Competency Scale for School Administrators.

Keywords: Leadership style, Technology leadership, Information Systems

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Abstract of Paper Accepted in RTCSE'2020

15

Emergent Leaders and Transformational in Effective Leadership Development in Information Technology

[1]Yousef A.Baker El-Ebiary, [2]Ahmed Hassan Hassan, [3]Waheeb Abu-Ulbeh, [4*]M. Hafiz Yusoff, [5]Seita Almandeel, [6]Bishwajeet Pandey

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Abstract

Purpose – Effective leadership has been the focus of much research in recent years, but leadership development is still understudied. Information technology (IT) continues to grow in importance due to the industries IT creates, the industries IT disrupts, and the potential IT holds for all companies. Because leadership is highly context bound, the purpose of this paper is to examine leadership development in the IT context to take first steps toward establishing best practices for IT leadership development. Design/methodology/approach – This conceptual paper reviews leadership in general before performing an integrated literature review of leadership as it has been studied in the IT context. Then the paper presents three propositions regarding effective IT leadership development. Findings – IT leadership development should involve formal mentoring, robust feedback that is integrated into the development plan, and should be treated as a core process for long-term success.

Keywords: Information technology, Mentoring, Information Systems, Leadership development, Transformational leadership, Emergent leadership

ISBN:978-81-943783-0-3

Abstract of Paper Accepted in RTCSE'2020

16

Extending The Information Systems Success Model with Transformational Leadership and Compatibility

[1]Yousef A.Baker El-Ebiary, [2]Waheeb Abu-Ulbeh, [3]Helmi Murad Ebrahim, [4*]M. Hafiz Yusoff, [5]Seita Almandeel, [6]Bishwajeet Pandey

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Abstract

Online learning has evolved into a necessary means of learning because of its capability to enhance the education quality with minimum resources and infrastructure. Nevertheless, while academics have studied the espousal and use of online learning in various settings, the effect of compatibility and transformational leadership (TL) still remains to be seen, with regards to the Yemeni context. The purpose of this paper is to forward the Delone and Mclean Information System (IS) success Model by integrating compatibility and TL constructs as precursors to user contentment and actual use for estimating performance of students. The questionnaire technique was utilised for gathering primary data from 448 students in nine state-funded Yemeni universities. The six variables in the recommended framework were gauged utilising current scales. The outcomes encompassed three key results: overall quality (data, system and service quality), compatibility and TL have a favourable effect on user satisfaction and actual use; actual use considerably estimates user satisfaction; and user satisfaction and actual use have a favourable effect on performance of students. The research populace comprised students from nine state funded universities, it did not include administrative and academic staff. Furthermore, as

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	the study was cross-sectional, it studied the variables at a single point of time. Attaining experience in utilising online learning would transform the convictions of students, and this cannot be traced through a cross-sectional scrutiny. This study supplements the existing studies on information systems by blending overall quality, compatibility, TL, actual use and client satisfaction for estimating the effect of online learning among students from nine state-funded Yemeni universities. ***Keywords:*** Mobile learning, DeLone and McLean model, Leadership, Partial least squares, Empirical study, E-learning

Abstract of Paper Accepted in RTCSE'2020

17

Real Time Facial Expression Recognition System Based on Deep Learning

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Abstract

The automatic detection of facial expressions is an active research topic, since its wide fields of applications in human-computer interaction, games, security or education. However, the latest studies have been made in controlled laboratory environments, which is not according to real world scenarios. For that reason, a real time Facial Expression Recognition System (FERS) is proposed in this paper, in which a deep learning approach is applied to enhance the detection of six basic emotions: happiness, sadness, anger, disgust, fear and surprise in a real-time video streaming. This system is composed of three main components: face detection, face preparation and face expression classification. The results of proposed FERS achieve a 65% of accuracy, trained over 35558 face images.

Keywords: *Affective Computing, Computer Vision, Facial Expression Recognition, Convolutional Neural Networks, Deep Learning, Emotion Classification.*

ISBN:978-81-943783-0-3

Abstract of Paper Accepted in RTCSE'2020

18

3 Axis Palletizer

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Abstract

Around the world packaging is done by complex machines and one of these machines is known as a palletizer, the types of which will be discussed and why one approach would be more useful to our desired application. As we saw the need for this type of product hence we decided to make a proof of concept using local equipment and trying to keep the cost down from all the major foreign competitors and to provide the local industry an economical and viable solution the packaging problem that will not only increase production quality and pace but will not impact the financial bottom line of the company. After identifying the problem, we went on to design iteratively and fabricate the structure with as modest technique we could work with so that the overall cost is kept down. Then the selection of motors and amplifiers and other electronics based of on needs and weight lifting requirements as this prototype is supposed to lift 5-6 kg. The end goal is to provide an economical yet reliable and upgradable solution to the packaging problem using automation and to increase the production capabilities and to remove any post- production related bottle necks and to improve the overall margins gained on the product.

Keywords: *Robots, Palletizers, Autonomous, Pallets, Stacks.*

ISBN:978-81-943783-0-3

Abstract of Paper Accepted in RTCSE'2020

19

Using AR technologies in medical visualization

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ABSTRACT

Augmented reality enables real-time interaction between the user, real objects and virtual objects. With this possibility we can increase user-experience, performance and raise the quality of services in many areas, such as museum exhibition, architecture and surgery. Proposed solutions helps visualize data that don't exist or hidden. This allows doctors to easily prepare for surgery and see where internal structures are located during procedure, which makes it less invasive and improve rehabilitation time.

Keywords: Augmented Reality, MRI data processing, Microsoft HoloLens, 3D visualization of anatomical structures, 3D printing.

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Abstract of Paper Accepted in RTCSE'2020

26

Design of Low Power Transceiver on Spartan-3 and Spartan-6 FPGA

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Abstract

In this research work, a low power transceiver is designed using Spartan-3 and Spartan-6 Field-Programmable Gate Array (FPGA). In this work, a Universal Asynchronous Receiver Transmitter (UART) device is used as a transceiver. The implementation of UART is done on Xilinx 14.1 ISE Design Suite and the results of the power analysis are targeted on Spartan-3 and Spartan-6 FPGA. The variation of different power of chips that are fabricated on FPGA for e.g., Input/Output (I/O) power, Leakage power, Signal power, Logic power, and the Total power, is observed by changing the voltage supply. This research work shows how the change in voltage influence the power consumption of UART on Spartan-3 and Spartan-6 FPGA devices. It is observed that Spartan-6 is found to be more power-efficient as voltage supply increases.

Keywords: *Spartan-3, Spartan-6, Power, Voltage, Field-Programmable Gate Array (FPGA), Universal Asynchronous Receiver Transmitter (UART).*

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Abstract of Paper Accepted in RTCSE'2020

40

Convolutional Neural Networks Model in premature detection of Melanoma

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Abstract

The objective of this research is provide to the specialists in skin cancer, a premature, rapid and non-invasive diagnosis of melanoma identification, using an image of the lesion, to apply to the treatment of a patient, the method used is the architecture contrast of Convolutional neural networks proposed by Laura Kocobinski of the University of Boston, against our architecture, which reduce the depth of the convolution filter of the last two convolutional layers to obtain maps of more significant characteristics. The performance of the model was reflected in the accuracy during the validation, considering the best result obtained, which is confirmed with the additional data set. The findings found with the application of this base architecture were improved accuracy from 0.79 to 0.83, with 30 epochs, compared to Kocobinski's AlexNet architecture, it was not possible to improve the accuracy of 0.90, however, the complexity of the network played an important role in the results we obtained, which was able to balance and obtain better results without increasing the epochs, the application of our research is very helpful for doctors, since it will allow them to quickly identify if an injury is melanoma or not and consequently treat it efficiently.

Keywords: *neural networks, convolutional neural networks, model, melanoma, premature detection.*

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Abstract of Paper Accepted in RTCSE'2020

41

Paper Currency Bacteria Removal and Processing Machine

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Abstract

This document concerned with the recycling or refreshing of the paper currency the circulation of the paper currency make it to loses its stiffness and due to the contaminated environment and humidity different kind of bacteria will grow on the surface of the currency which may cause different kind of diseases such as skin allergies, rashes , tuberculosis etc. As we know that Pakistan is among the underdeveloped countries with low GDP and every year printing of new currency notes always increase the burden on the economy of the country which s already suffering from economic crisis. PCBRPM is one of the solution to increase the stiffness of the paper currency by using hot press as well as for the removal of germs and stains it will clean it with water and antibacterial agent which will remove dirt stain and bacteria from the currency to complete the refreshing affect with the economical factor which will decrease the cost and expenditure to print new currency notes.

Keywords: ***Bacteria, Currency, Recycling, Refreshing, Economy, Hot Press, Cleaning agent, Stains, Contaminated environment, Commercial, Market Analysis etc.***

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Abstract of Paper Accepted in RTCSE'2020

43

Design and Analysis of Inline Pipe Turbine

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ABSTRACT

In this current smart era, electricity is considered a necessity for development as almost all of machinery and circuitry runs on electrical power. Therefore, the production of electricity is a must for attaining progress. But nowadays, there is a constant struggle for access to large fossil reservoirs and the development for renewable resources is slow. There have been innovative inventions such as the wind turbines, water turbines, solar cells and many other renewable sources. These resources have slowed down the depletion of fossil fuels to a certain extent but these inventions do have their shortcomings and most areas where energy harnessing is possible, are left unanswered. One such area where energy conversion is possible is in the water transportation system. To harness electrical energy from this system, a small turbine generator can be installed onto the pipelines to harness the kinetic energy of the flowing water in them. Hence forth by applying this research, another renewable energy resource is developed.

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Abstract of Paper Accepted in RTCSE'2020

44

Analysis the Efficiency of Solar Water Desalination System: An Experimental Study

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Abstract

Concentrated Solar Power can be the solution of today. Solar power being available in plenty can be harnessed using many of the concentrated solar power technologies. Climate changes are observed throughout the world and according to research reports, fresh water resources are drying up at a very high rate. In order to tackle the need of fresh water, Concentrated Solar desalination is prosed. Parabolic trough collector technology is to be employed with simple distillation phenomenon. Construction, calculations, implementation and results would be discussed in this report.

Keywords – Desalination, Solar Energy Harvesting, Efficient system, Mechanical Experimentation

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Abstract of Paper Accepted in RTCSE'2020

49

Hyperconverged Systems Applied (HSA) Methodology to optimize the process of technological renewal in Data Centers

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Abstract

This paper proposes to improve the process of technological renewal in data centers with the implementation of hyperconverged systems, through the virtualization of physical equipment, networks, storage and systems, to achieve cost reduction in critical areas such as: maintenance, consumption of energy, data center space and the optimization of the resources necessary for the administration and specialization of the IT team. The proposed methodology HSA (Hyperconverged Systems Applied), considers the planning and implementation of an integral IT architecture that combines software with high-level servers that can host systems capable of providing support and continuity of IT services, to design, implement and manage the technology in an orderly manner, reducing management efforts and increasing the organization's ability to support new projects. According to the results obtained with the application of the HSA methodology, it was reduced the size of virtualized systems by an average of 33.33% and the amount of non-virtualized technology by an average of 44.33%, depending on the cases evaluated was increased the level of IT team experience at 56.67% when managing more technology with less staff.

Keywords: *Hyperconverged systems, methodology, IT architecture, IT* services, *Data Center.*

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50

Fuzzy Optimization Model for post harvest selection process of Pecan (Carya illinoinensis)

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Abstract

The quality of food is associated with a set of properties and characteristics that can be considered from its chemical and nutritional physical composition that have the ability to meet the needs of the consumer. The paper aims to evaluate the application of fuzzy logic in the evaluation and classification of the selection of pecans in the post harvest process using tests and instruments that determine their best quality. Fuzzy logic has proven to be very effective with matlab/simulink to develop and simulate the entire system, through an appropriate choice of rules and membership functions and applying the Mamdani method to defuzzification the results considering they are positive.

Keywords: *Fuzzy logic, matlab/simulink, post-harvest, selection process, sensory acceptability, carya illinoinensis.*

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51

Configuration Management of information systems in Peruvian Goverment organizations

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Abstract

Abstract—Having a well-defined control of the change processes in the configuration management in the software development life cycle, before and after being put into production environment, implies an effort of development personnel and an additional cost in the maintenance system. The objective of this paper is to establish the guidelines to regulate the activities and tasks during the process of development and maintenance of software-based systems in order to control the changes, integrity and traceability of its configuration, for this purpose it is taken as a reference the peruvian technical standards NTP-ISO/IEC 12207: 2016 for Software and systems engineering, NTP-ISO/IEC 27001: 2014 for Information security management systems and the methodology MÉTRICA version 3 for the systematization of life cycle of the software activities. The proposal defines the roles and responsibilities, the activities of each thread and the use of control templates, the validation of the was achieved through the analysis of three software systems with results that show that there is a better organization in the development, maintenance, control of the versions of the elements and the percentage of error in the configuration.

Keywords: *Software Configuration Management, information system, maintenance, change control, NTP-ISO / IEC 27001:2014, NTP-ISO / IEC 12207: 2016.*

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52

Improvement of Academic Performance of Engineering Students through an Adaptive Educational Hypermedia System (AEHS)

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Abstract

This paper describes how to improve the academic performance of engineering university students through an Adaptive Educational Hypermedia System (AEHS). The psychological basis, learning styles and MOOMH methodology for the development of the system are exposed, which with its implementation achieves adaptability and works for students as an "intelligent tutor", allowing them to guide their education as academic tutor. Not only shows its content that meets the needs of the student, but it is also represented in elements such as color adaptation, work tools and even academic recommendations based on the interactions that the user makes within the system, the system recognizes its pattern of use, and when the student is logged in again, it presents a friendlier interface that the student prefers use, it is wider in content and, above all, easy to use and understand. In addition, the AEHS allows to extend education allowing the assignment of more domain areas, in the field of engineering, that is, the SHAE can be adapted to various engineering specialties such as: industrial, software, telecommunications, mechanics and others.

Keywords: ***Adaptive Educational Hypermedia, learning styles, MOOMH, educational software, adaptive software.***

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57

Severity of Causative Factors to Construction Waste Generation: Iraq Construction Industry

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Abstract

Objectives: *Construction and Demolition (C&D) wastes affect negatively to the environment and economy of Iraq. This paper presents the severity of 78 identified factors contributing to C&D waste generation in Iraqi construction industries.* **Methods/Statistical analysis**: *The structured questionnaire survey amongst contractors, consultants and clients was conducted and a total of 208 valid response data was collected for the analysis purpose. Descriptive analysis employing average score index was used for collected data.* **Findings:** *The results indicate severity of each factor toward the C&D waste generation and also the severity ranking. It was found that poor site management, lack of experience, rework, design errors and lack of environmental awareness are ranked as five most severe factors to C&D waste generation in Iraqi construction industry.* **Application/Improvements:** *Benefit from this study will be shared amongst researchers and also construction community to ensure the minimization of the (C&D) waste generation in Iraq.*

Keywords: *Construction and Demolition Waste; Construction Waste Causes; Factors Contributing C&D; Iraqi Construction Industries Causing C&D; Ranking and Severity of C&D Waste.*

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59

A Review on NSM-CFRP technique using in Shear Strengthening of RC Deep Beams

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Abstract

Near-surface mounted (NSM) using fiber-reinforced polymer (FRP) bars has been become an effective technique to improve flexural & shear behavior of existing and or new reinforced concrete (RC) elements. This is an innovative and emerging technique and much attention has been given by researchers. Thus, this paper attempts to review past and present studies related to the shear strengthening of RC deep beams using NSM-CFRP bar. The past and present research results were obtained through four major databases namely: ASCE, EBSCO, SCOPUS and Science Direct. The careful concern has been taken to review the literature focusing on NSM-CFRP in shear strengthening. The total final set of 56 articles categorized into three main classes. Class 1 comprises on the review studies on the usage of NSM for shear strengthening. Class 2 includes articles related to the structural behavior of RC members' strength in shear. Class 3 includes articles related to theoretical aspects of the NSM-FRP on shear strength for developing a new approach to calculate shear influences provided by NSM-FRP. In conclusion, this study identifies three basic characteristics of this field: (1) the motivation of using NSM-FRP bars in shear and its applications, (2) open challenges and hindering utilization and (3) the recommendations to improve the acceptance and use of NSM-FRP bars.

Keywords: *Near-surface mounted, Concrete fiber-reinforced polymer, Deep beam, Shear strengthening, Application.*

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71

Hybrid Optimization of Piezoelectric Wind Turbine and Photovoltaic system

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Abstract

The demand for electricity is increasing day by day and the natural reserves of nonrenewable fuels are rapidly diminishing. To avoid these energy crises and reduce dependency on natural fuels, there is a sudden growth in the renewable and alternate energy source market which includes the wind energy, solar energy as well as the energy from vibrations (Piezoelectricity). Since its discovery in 18th century, the method of generating power by using vibrations has improved in several ways. There are numerous ways to provide the required pressure/vibration to the piezoelectric material. This paper proposes a hybrid simulation model that uses two energy sources which are wind and solar energy. The kinetic energy of wind is captured by a wind turbine and converted into the rotational motion of the shaft. Furthermore, this rotational motion is converted to linear vibrations, utilized by two piezoelectricity-levers to generate electricity. The output from the piezoelectric system is converted to DC by a DC-DC converter. The solar panel is employed with a Maximum Power Point Tracking (MPPT) technique which ensures the maximum output from solar energy at all times. The output from both the solar panel and the piezoelectric system is stored in a battery which provides to DC loads directly and to AC loads through an inverter.

Keywords: *MPPT,DC-DC converter, PEWT, PV Energy.*

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72

A Low-Cost Intelligent Hardware System for Real-Time Infant Cry Detection and Classification

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Abstract: *Cry of an infant serves as the main communication language to seek the attention of their caretakers. Acoustic characteristics of cries provide insights into the physiological and psychological states of the infants. To understand the reason behind the cries, caretakers pay attention to acoustic characteristics like tone, pitch, and loudness, etc. Infant cry classification has gained importance in both commercial and medical fields due to its applications such as baby monitoring and non-invasive diagnosis of health conditions of newborns in early stages. This paper discusses the implementation of a low-cost hardware device for real-time cry classification. Further, this presents the use of time and frequency domain features to detect cry words and identify the reasons. The proposed solution covers the use of classification techniques like artificial neural networks and k nearest neighbors to gain accuracy figures over 90% and 70% for cry detection and classification respectively while maintaining the resource utilization at a minimum level to keep hardware solution simple and low cost.*

Keywords: *Cry classification, Voice Activity Detection, Short-Time Energy, Short-Time Zero-Crossings, Mel-frequency cepstral coefficients, Artificial Neural Networks, K-Nearest Neighbors.*

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73

IoT Based Fluid Management Automation System Using Raspberry Pi and Ultrasonic Sensors.

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Abstract

Water crises is one of the most important problem of current era, as a huge amount of water wasted every year especially in residential and industrial. Improper timings and extensive electric consumption are one of the hectic issues faced by the society. We have successfully created a Kivy application for the user in which they can control the fluid wastage problem with the integration of hardware that includes (Microcontrollers, Ultrasonic sensors, Relay shield, node MCU 8266, and contactor). Through the help of our designed application, user can control: Water level status, Motor accessibility (on/off), status of water consumption, message alert facility of fluid. In future work, we focus to enhance the water model and will try to promote it to immense water plants as well as it can be adopted by agriculture sectors.

Keywords: *Crises Extensive, Kivy, Relay Shield, Consumption, Accessibilities, Immense.*

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78

DCM Boost Converter with High Efficiency

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Abstract

The discontinuous conduction mode (DCM) boost converter is widely used topology because of numerous advantages like no reverse recovery loss in freewheeling diode, no loss during turning on of the switch, small size of output capacitor, high power factor (PF) for universal input voltage range, and easy design of electromagnetic interference (EMI) filter because of constant switching frequency operation. However, its efficiency is low when operated in constant duty-cycle control (CDCC) scheme. For enhancing the efficiency of the DCM boost converter, a variable duty-cycle control (VDCC) method has been introduced. Fitting duty-cycle method is also discussed to make circuit implementation easier. Comparative analysis is given in terms of loss analysis for both types of control schemes and for verifying the validity of proposed technique, the simulation results are carried out.

Keywords: *Boost converter, discontinuous conduction mode (DCM), power factor correction (PFC), variable duty-cycle control (VDCC), constant duty-cycle control (CDCC), electromagnetic interference (EMI), duty-cycle*

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84

The Impact of Technological Innovation in Promoting Marketing Strategies - A Review Paper

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Abstract

This research examines the implications of integrating IT with marketing capabilities and other resources throughout the company. Specifically, this study empirically examines a model that portrays e-marketing as an integration of complementary technology and human and human resources that, together, positively affect a company's performance. The results of a survey highlight the importance of how market and technology orientation leads to the ability of e-marketing and that it shows that it positively affects the company's performance by improving customer retention and satisfaction. The results suggest that researchers and practitioners should pay particular attention to the complementary resources needed to successfully implement IT-supported marketing initiatives and that focusing on technology alone may not be sufficient.

Keywords: E-Marketing, Social Network, Technological Innovation

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85

The Factors affecting online shopping in Jordan

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Abstract

The perceived risk to consumers has been considered a primary concern for the decision-making process while connecting to the Internet shopping. For the purpose of this study, perceived risk is defined as the probability of loss in pursuit of the desired result of online shopping. The aim of this study is to examine the impact of perceived risks (financial, product, time, delivery, and information security) on online shopping behavior in Jordan. To investigate research hypotheses, data were collected from online shopping users; a survey was conducted with an online sample among consumers who had previously purchased online mainly from major online stores in Jordan, the study revealed that financial risk, product risk and delivery risk Information security risks will adversely affect online shopping behavior. The results also showed that the other two dimensions, perceived time risks, perceived social risks have no impact on online shopping.

Keywords: Online Shopping, Electronic Commerce, Jordan

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86

Extreme Eigenvalue Based Detection Under Impact of Noise and Interference Uncertainty

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Abstract

The spectrum sensing in cognitive radio networks is challenging due to the requirement of signal detection under very low signal to noise ratio(SNR) and further due to the distributional uncertainty in the aggregate interference. In this paper our main objective is to design detection mechanism with performance fairly independent of SINR, higher accuracy and medium algorithmic complexity. Secondly, the detector has ability to perform better in the presence of distributional uncertainty of non-Gaussian interference. The present work employs the centering matrix to scale Sample Covariance matrix with Wishart distribution. In this work, the performance of the proposed detection algorithm is evaluated for signals under different modulation schemes and under different fading environment. Also, a realistic DVBT-2K signal has been used to evaluate the performance of proposed algorithm. Furthermore, distributional uncertainty in the non-Gaussian interference is quantified by calculating the differential entropy of the known PDF of interference and this is used to calculate the new threshold. In this work, we have used the centering matrix to scale Sample Covariance matrix with Wishart distribution because an asymptotic analysis of the eigenvalues gives only the idea of presence or absence of extreme eigenvalues outside the limiting support space of the distribution. However, the probabilistic behavior of the extreme eigenvalues and the spacings between eigenvalues are noteworthy in the case of signal detection and identification. In practical situations, due to the finite system dimensions and the fact that there is non zero probability of finding eigenvalues outside the support space even without signal presence, it is difficult to decide the presence or the absence of the signal based on the observations of the sample eigenvalues. An empirical study is carried out to emphasize how the extreme eigenvalues of the sample covariance matrix of received signal converges to the same limiting value and how these values fluctuate in case of Wishart matrix.

Keywords: cognitive radio, spectrum sensing, signal detection,sample covariance matrix, interference uncertainty

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87

A classification method of the incident by extraction from text

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Abstract

In this research, in order to use for prediction of the accident risk which prevents serious accident and disaster, the method of detecting and classifying an incident from a text is proposed. A multi-attribute matching machine is used for detection and classification. The feature expression is extracted from the incident case sentence currently released, and detection of an incident and the classification of an accident kind are carried out by the matching rule created from extraction data. Although classification precision was mostly as good as 0.783 as a result of the evaluation experiment, the room for an improvement for extraction precision was seen. The incident which was able to be managed with flawlessness or a slight injury although it was likely to get injured can warn of a big accident, and can urge evasion of it. Therefore, this research which leads to an early warning by detecting and classifying mechanically is meaningful. A future subject is an improvement of extraction precision.

Keywords: *incident detection, incident classification, multi-attribute pattern matching*

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93

Real Time Door Security System with Three Point Authentication

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Abstract

Security play a key role in lots of places like offices, institutions, other libraries and laboratories. To keep our data confidential, so access to the unauthorized person to them is not necessary. Nowadays, we need a security system to protect loved ones and valuables. In earlier days to provide security system Technologies such as RFID cards were used. However, these cards were not very useful the purpose of the user is therefore to make them likely to be lost, stolen and forgotten the study aims to provide security system by designing a smart door access system using fingerprints module, facial reorganization and voice message passing. Use of this system is intended to provide access only to authorized persons. The term 'home.' Security 'is becoming increasingly prevalent as a major issue in today's life challenger. Developing a home-protection device is to make it user-friendly that can reduce humans, ensure the safety and security of people and their homes with effort. In the case, the person Rate as Guest, device gets sound but doesn't open door, device can automatically open the door from anywhere. As the guest is known, people do not have to walk to the door to open it and when the device identifies a person as an unknown person, it generates a notification in the device an unknown person wants to enter your home.

Keywords: *Biometrics, Face Recognition, Fingerprint Sensor, Voice Message Transfer, Security system authorization.*

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94

Instruction Set Extension of Nios II for Floating-Point HOG Description and Implementation on an FPGA

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Abstract

Human detection is one of the hot topics in the field of computer vision. HOG descriptor is a widely accepted local feature extractor with high accuracy and it has heavy computation blocks in processing. Therefore, its application takes a long processing time. To improve execution time of algorithm, one of the methods is hardware acceleration. In this paper, we propose an application-specific HOG descriptor architecture on FPGA with a soft processor called as Nios II. It has the ability of instruction set extension to its base micro-architecture without any modification on the core. We select HOG specific custom instruction sets to extend. To obtain custom instruction set, we used DAG representation which is generated by LLVM compiler. The algorithm is applied on the only-processor architecture and on the proposed architecture with instruction set extension. The total execution time is measured using hardware clock counter to approximate real time consumption. The results of both architectures are compared in terms of clock count. Obviously, proposed architecture which has fully floating-point calculation is accelerated 17.68 times in comparison with pure software implementation of HOG descriptor. The implementation of the architecture is applied for 640x480x8bit test frame on low-cost Cyclone V FPGA platform.

Keywords: custom instructions, FPGA, ASIP, HOG, hardware accelerator

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102

A Naïve Bayes Reputation Generating Model based on Sentiment Analysis and Opinion Fusion

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Abstract

In recent times, reviewing the product on the seller website is very convenient and helpful for other users. The seller websites have provided a user-friendly platform to express their opinion or review of a product without any biases. These reviews help other users make better decisions, so the process of reputation generation is of great relevance at the current time. Reputation is the score of credibility and reliability, which plays a vital role as having a poor reputation could affect the product market value. So, generating an accurate reputation is critical. We have proposed a Naïve Bayes unigram and bigram-based model which performs opinion mining and sentiment analysis and generates reputation using Weighted Arithmetic Mean value on the movie dataset. The results have shown improvement with respect to the existing models.

Keywords: Reputation Generation, Naïve Bayes, Sentiment Analysis, Opinion Mining, Weighted Arithmetic Mean

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104

Digital application of analog-like time perception mechanism based on Analog on Digital (AoD) theory

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Abstract

Checking time on smartphones instead of watches is being popular among people. Current time information could be accurately displayed in digital numerals on smartphone applications. On the other hand, analog clocks and watches provide people with reality of the process through which "time", the quantitative information passes. They are different from digital watches and smartphone clock applications that display time based on the mechanical systems such as hands movements, time representation of dial and the spring-driven function. This paper analyzes the human time perception mechanism regarding the use of analog clocks based on the design theory of Analog on Digital (AoD Theory). With the examination, the authors would propose the method to apply the design elements of analog clock into the digital devices such as smart watches and smartphones to the schedule management. The proposed application, targets smartwatches as media and represents the reality of time passing that is originally provided by analog clocks. The interface design adopts the time representation of analog clocks into the schedule display so that it can intuitively indicates the lapse of time passing for each activity scheduled in a day. Moreover, we design the users' operational experience close to that of analog tools by realizing "the real feel of using clocks" through the representation of the spring-driven system on digital style. The practicability of AoD theory cloud be demonstrated by the proposed design method and furthermore the possibility of next-generation computing method would be considered.

Keywords: Interface Design, Time Perception, Smartphone, Smart Watch, Information Media, Media Design.

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107

Soil Moisture and Environmental Temperature and Humidity Sensor-Based Smart Irrigation System Design using Arduino and FPGA

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Abstract

In this work, we have successfully implemented a Moisturization sensor to detect the presence of moisture and trigger pump to on/off depending on the presence of moisture in the soil. The implementation of soil moisture sensor is done on the Arduino board using Yl-69 sensor and the implementation of temperature and humidity is done on Field Programmable Gate Array (FPGA) device. Artix-7 FPGA is used for interfacing the sensor. FPGA device not only displays the temperature value but also makes the whole system power-efficient. We have also surveyed the required water content in soil for the ideal production of crops. We set a threshold level of moisture for every crop if moisture will less than threshold then pump will automatically start otherwise pump will stop. We have also observed that Sugarcane consumes the maximum amount of water among the list of surveyed crops in Table 1. The minimum amount of water is required by Bean. Therefore, pump up time will greater for sugarcane and minimum for bean.

Keywords: Moisture, Humidity, Sensor, Pump, FPGA, Arduino, Smart Irrigation System

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108

THE ALGORITHM OF THE METHOD OF CALCULATING THE QUALITY OF SERVICE ASYNCHRONOUS NETWORK

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Abstract

In this paper was considered a model for computing the statistical parameters of the quality of service of an asynchronous network. In many respects, the achievable level of the quality of the services provided is determined at the design stage of the network, when decisions are made regarding the subscriber capacity of stations, the capacity of the bundles of trunk channels, the composition and volume of telecommunications services provided. The current economic and political conditions created the creation of territorially distributed enterprises and structures, which necessitated the construction of corporate communication networks that provide high-quality and reliable communications to large departments, corporations and industries, for example, the central apparatus with regional enterprises or the connection of enterprises among themselves. The process of information exchange is actively stimulated by the expansion of the commercial activities of large companies. Thus, for today the problem of creation of corporate communication networks, having their principal differences from public networks is at the forefront.

Keywords: Broadband digital network with integration of services, multiservice traffic, asynchronous data transmission network, switching nodes, switches, asynchronous transfer mode.

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111

Realization of Unity Power Factor for AC/DC Boundary Conduction Mode Flyback Converter with any Specific Turn's Ratio

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Abstract

The boundary conduction mode (BCM) flyback converter is widely used topology because of numerous advantages like isolation between input and output circuits, minimum component count, low operating duct-cycle, and simple structure. However, it is not possible to achieve high input power factor (PF) as the on-time is constant. It causes the input current total harmonic distortion (THD) to not satisfy IEC61000-3-2 limits. For improving the PF of the BCM flyback converter, a variable on-time control (VOTC) method has been introduced. The implementation circuits are also discussed. For verifying the validity of proposed technique, the simulation results are carried out.

Keywords: Flyback converter, boundary conduction mode (BCM), power factor correction (PFC), variable on-time control (VOTC), constant on-time control (COTC) (COTC).

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112

Proposal for Social Environment System by Low-Cost Computing

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Abstract

Recently, development of computers, systems, and networks has been quite remarkable. The extremely high-performance systems and personal computers that could not be imagined several years ago, have evolved at a tremendous developmental speed. Today, anyone can obtain a high-performance devices or systems. However, such equipment is very expensive in proportion to performance. On the other hand, although expensive and highly functional devices and systems are generalized, there are considerable number of users who prefer to use inexpensive and moderate-performance devices and systems. The reason for this is the "cost" problem. Even with such a middle-level performance devices or systems that have the minimum necessary functions, there is no problem at all for the purposeful use. By making good use of such devices and systems, sometimes people can build systems that works like high-performance devices or systems. From this, we assumed that it would be possible to create a system that has functions comparable to high-performance devices and systems while keeping costs down. In this research, we define this mechanism and concept as "Low-Cost Computing". "Low-Cost Computing" specifically means "combining general-purpose devices and systems to reproduce high-performance systems at an extremely low cost. In this research, we propose a new type of system that effectively utilize the current social environment, taking the idea of "Low-Cost Computing" as linchpin.

Keywords: *Social Environment, Low-Cost Computing, Application, Remote Class*

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114

Design for Group Messenger Incorporating Concept of "Three Wise Monkeys"

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Abstract

In recent years, communication on Social Networking Services (SNS) and messenger applications (messenger apps) have been spreading rapidly. In particular, we casually see group chats with a number of users in various situations. In Group chats, people often share content that is not necessarily relevant to all of them, and many users tend to be passive. This is undesirable not only in terms of information gathering and sharing, but also in terms of people's daily productivity. The historically famous design of the "Three Wise Monkeys" suggests that it is not good to see, hear, or say something unnecessary. In this paper, we propose a system that enhances the convenience for one-to-many conversations (group chats) by restricting information based on the concept of "Three Wise Monkeys.".

Keywords: *Interface Design, Time Perception, Smartphone, Smart Watch, Information Media, Media Design.*

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115

Validation of the NFV SDN solution for the efficient management of MPLS infrastructures

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Abstract

Network virtualization consists of creating tunnels in the existing infrastructure and using a per-flow service. Network function virtualization allows the virtualization of "NFV" network functions from Layer 4 to Layer 7 of the OSI model, and thus NFV allows the creation of virtual functions in the network such as firewalls, intrusion detection and prevention systems, routers. Software-Defined Network " SDN " makes the network programmable and therefore allows a separation of the control plane from the data plane. In this paper we will validate our previously published solution for managing Multi-Protocol Label Switching "MPLS" networks based on an SDN NFV approach. The implementation has been performed in a real environment, the results obtained have shown the efficiency of our approach compared to classical solutions and SDN-only based solutions.

Keywords: *SDN, SDN NFV, MPLS, Management , Qos*

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121

EFFECT OF AUDIT COMMITTEE ON AUDIT EXPECTATION GAP-MEDIATING ROLE AUDIT QUALITY

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Abstract

In efficient markets, Security prices reveal all appropriate information. There have been numerous researches conducted with the purpose to test market efficiency in rising markets. This research aims to identify the effect of audit committee on the audit expectation gap and also consider the mediating effect of audit quality on corporate governance and Audit expectation Gap. The research samples of 194 non-financial companies have been selected from the Pakistan Stock Exchange for the period from 2009-2018. Corporate governance measured from ACind, ACsze, ACmeet, ACexp, audit quality measured from audit firm size and audit expectation gap measured by proxy i-e difference between market price and share price. The finding of this research corroborates with existing research that corporate governance and audit quality have significantly negatively associated with audit expectation gap and audit quality significantly mediates the relationship governance-gap. The recommendation of this research could develop proper enlightenment to the public, investors, the regulators.

Keywords: *Corporate Governance, Audit Quality, Audit Expectation Gap, Audit Committee, Mediation Analysis*

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126

The Online Platform Mechanism and Characteristics in Arabic Language Tests for Non-Native Speakers

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Abstract

This research paper attempts to address the experience of Al-Madinah International University (MEDIU) and its Technological techniques in measuring the skills of the Arabic language among students speaking to others through exams that are carried out via the Internet using modern technologies; with the aim of measuring the level of student achievement, and to identify more clearly the extent to which the curriculum accomplishes its goals, thus identifying strengths and weaknesses In that, and the appropriateness of this content in enabling them to acquire language skills from the reality of the educational process technologically, in the light of which it can work to improve and develop the educational and educational process and move forward. The study adopted the descriptive analytical approach.

Keywords: *Online tests, Language tests, Information Technology, Question Bank, Language Proficiency Standards.*

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127

The Importance of Rhetorical and the Technological Learning Solutions for Non-Arabic Speakers

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Abstract

The education sector has seen the introduction of modern technical means in the late last century, but in the twenty-first century there has become a qualitative leap in the use of modern technology, and there has become competition in the use of technologies in educational institutions, and these technologies have a major role in raising the purely educational level to the level of creativity and innovation And among the technical means introduced to the field of education: computers and audio-visual means, such as television and others, and the most important technical means that caused this jump is the Internet, which provides students with information as required, and at all times, and it's This topic will mention the roles that technology has played in the education sector. Accordingly, the research came in the following main axes: First: Technical solutions that contribute to facilitating the learning process. Second: The problem of teaching rhetoric to non-Arabic speakers and their causes. Third: The importance of Arabic rhetoric and its learning among non-Arabic speakers. Finally, search results and recommendations.

Keywords: *Technical Solutions, Arabic Language, E-Learning, Rhetoric, Social Media, Online Learning.*

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