

CONFERENCE PROGRAM

April 23-25, 2018

**2018 The 10th International Conference on Future Computer and
Communication
(ICFCC 2018)**

**The International Conference on Machine Vision and Applications
(ICMVA 2018)**

**SHAW FOUNDATION ALUMNI HOUSE
NATIONAL UNIVERSITY OF SINGAPORE**



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Welcome Address

We are pleased to welcome you to 2018 The 10th International Conference on Future Computer and Communication (ICFCC 2018) and The International Conference on Machine Vision and Applications (ICMVA 2018), which will take place in Singapore during April 23-25, 2018.

After several rounds of review procedure, the program committee accepted those papers to be published in conference proceedings. We wish to express our sincere appreciation to all the individuals who have contributed to ICFCC 2018 and ICMVA 2018 conference in various ways. Special thanks are extended to our colleagues in the program committee for their thorough review of all the submissions, which is vital to the success of the conference, and also to the members in the organizing committee and the volunteers who had dedicated their time and efforts in planning, promoting, organizing and helping the conference.

This conference program is highlighted by two Keynote Speakers: Prof. Girija Chetty University of Canberra, Canberra, Australia; Prof. Xudong Jiang, Nanyang Technological University, Singapore and a plenary speaker: Prof. Emanuel Grant, University of North Dakota, USA.

One best presentation will be selected from each session, evaluated from: originality; applicability; technical Merit; qualities of PPT; English. The best one will be announced at the end of each Session, and awarded the certificate over the Dinner banquet.

Let me, on behalf of the conference committee; cordially invite you to this outstanding conference. We look forward to receiving your paper in either research or development of acquired knowledge in order to disseminate to the wider audience. Join us at this event to see other excellent researchers share their work.

We wish you a successful conference and enjoyable visit in Singapore!

Conference Organizing Committee
Singapore

Organizing Committee

Conference Chair

Prof. Girija Chetty, University of Canberra, Australia
Prof. Xudong Jiang, Nanyang Technological University, Singapore

Program Chairs

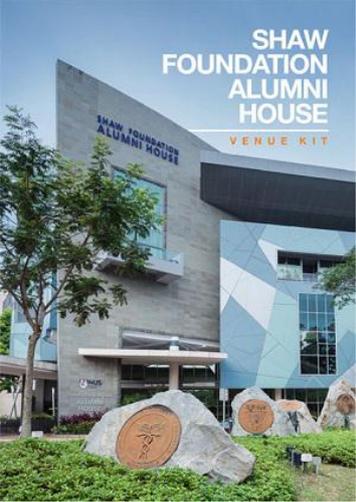
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Prof. Anongnart Srivihok, Kasetsart University, Thailand
Prof. Junchul Chun, Kyonggi University, Korea

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Local Information

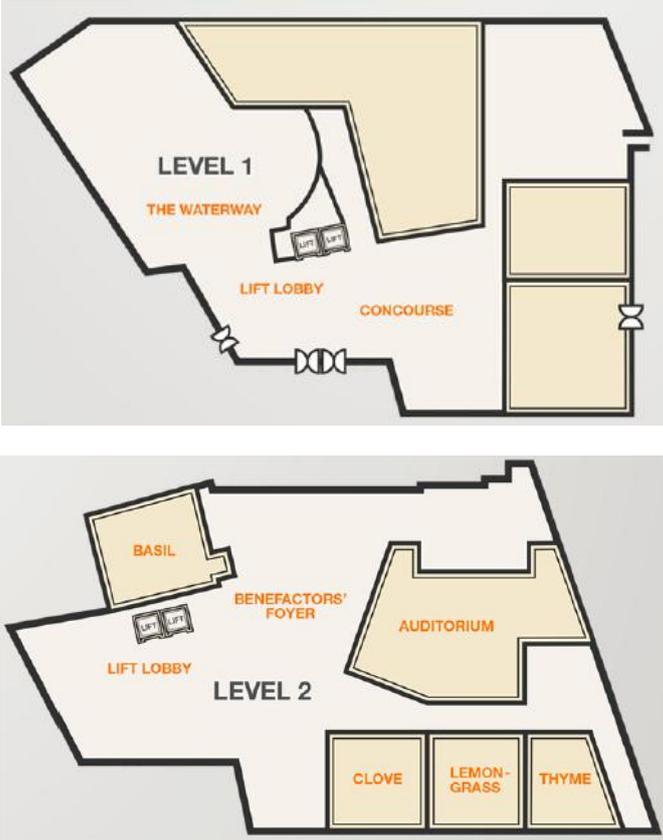
Conference Venue



SHAW FOUNDATION ALUMNI HOUSE NATIONAL UNIVERSITY OF SINGAPORE

Add: 11 Kent Ridge Drive, Singapore 119244 Tel: (650) 342-9200
<http://alumnet.nus.edu.sg/module/portal/index.html>
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Floor Plan



How to get there?



Time

UTC/GMT+8

Weather

The Weather Situation of Singapore in April

Average daily minimum temperature

25°C

Average daily highest temperature

30°C

Emergency

Hospital Emergency phone: 999

Police Emergencyphone: 999

Fire Service: 995

Transportation Tips

From Buona Vista MRT Station - Bus 196

Walk to the bus stop opposite Buona Vista MRT Station located near Exit D, Bus Stop No. 11369. Board Bus 196 (towards Clementi Interchange). Alight 6 stops later at Bus Stop No. 19059. Walk approximately 5 to 8 minutes

From Clementi MRT Station - Bus 183

Walk to Clementi Bus Stop, Bus Stop No. 17179, from Clementi MRT Station (Exit B). Board Bus 183 (towards Jurong East Temp Interchange). Alight 3 stops later at Bus Stop No. 17099. Walk approximately 8 to 10 minutes

From Clementi Bus Interchange - Bus 96

Board Bus 96 (towards Clementi Interchange). Alight 3 stops later at Bus Stop No. 17099. Walk approximately 8 to 10 minutes

From Kent Ridge MRT Station - NUS Internal Bus Shuttle

Walk to Kent Ridge Bus Stop, Bus Stop No. 18331, from Kent Ridge MRT Station (Exit A). Board NUS Internal Bus Shuttle D2. Alight 5 stops later at UTown.

Instructions for Oral & Poster Presentations

Oral Presentations

- **Timing:** a maximum of 15 minutes total, including speaking time and discussion. Please make sure your presentation is well timed. Please keep in mind that the program is full and that the speaker after you would like their allocated time available to them.
- You can use CD or USB flash drive (memory stick), make sure you scanned viruses in your own computer. Each speaker is required to meet her / his session chair in the corresponding session rooms 10 minutes before the session starts and copy the slide file (PPT or PDF) to the computer.
- It is suggested that you email a copy of your presentation to your personal in box as a backup. If for some reason the files can't be accessed from your flash drive, you will be able to download them to the computer from your email.
- Please note that each session room will be equipped with a LCD projector, screen, point device, microphone, and a laptop with general presentation software such as Microsoft Power Point and Adobe Reader. Please make sure that your files are compatible and readable with our operation system by using commonly used fronts and symbols. If you plan to use your own computer, please try the connection and make sure it works before your presentation.
- Movies: If your Power Point files contain movies please make sure that they are well formatted and connected to the main files.

Poster Presentations

- Maximum poster size is 36 inches wide by 48 inches high (3ft.x4ft.)
- Posters are required to be condensed and attractive. The characters should be large enough so that they are visible from 1 meter apart.
- Please note that during your poster session, the author should stay by your poster paper to explain and discuss your paper with visiting delegates.

Dress code

- Please wearing formal clothes or national characteristics of clothing

Keynote Speakers



Prof . Girija Chetty
University of Canberra, Canberra, Australia

Biography: Dr. Girija Chetty has a Bachelors and Masters degree in Electrical Engineering and Computer Science, and PhD in Information Sciences and Engineering from Australia. She has more than 25 years of experience in Industry, Research and Teaching from Universities and Research and Development Companies from India and Australia, and has held several leadership positions including Head of Software Engineering and Computer Science, and Course Director for Master of Computing Course. Currently, she is the Head of Multimodal Systems and Information Fusion Group in University of Canberra, Australia, and leads a research group with several PhD students, Post Docs, research assistants and regular International and National visiting researchers. She is a Senior Member of IEEE, USA, and senior member of Australian Computer Society, and her research interests are in the area of multimodal systems, computer vision, pattern recognition and image processing. She has published extensively with more than 120 fully refereed publications in several invited book chapters, edited books, high quality conference and journals, and she is in the editorial boards, technical review committees and regular reviewer for several IEEE, Elsevier and IET journals in Computer Vision, Pattern Recognition and Image Processing.

Title: Deep Fusion Technologies for Computational Collective Intelligence

Abstract: We are currently living in a complex world, with global turmoil due to several reasons, including threats associated with environmental issues, resource shortages, ethnic conflicts, terrorism events, and other unexpected natural disasters. To address these unforeseen turbulences, humans and machines need to work collectively at the global level to change our ways of interacting with one another, and with the nature and the other living species around us. Technology can come to the rescue in a big way, and by using advances in cutting edge information and communication technologies, such as AI, Big Data, Machine Learning and Information Fusion, it is possible to develop computational collective intelligence platforms for an improved actionable intelligence with better strategies for solving the complex problems, the humanity is currently facing. However, this is easier said than done. This is due to the inherent complexity of the real-world phenomena, and its internal workings, for the above mentioned complex scenarios, as it is often difficult to extract complete knowledge about the physical process of interest, from a single source or information channel. One main reason could be existence of complex information in multiple layers, with knowledge hidden and embedded within these natural phenomena. A detailed understanding, modelling and characterization of such processes can be done, with contributions from several different types of human as well as machine based systems, sensors, and computational frameworks, for providing high quality, efficient and robust technological platforms and tools for

humans to deal with these challenges. The concept of 'multi-modality' and 'data-fusion' can often be leveraged in this context, which in general, refers to information acquisition about the process or phenomena, from multiple information sources or channels. By utilizing different data driven approaches - with information extraction from multiple disparate modalities or various representations of these modalities, to inform about the same process or phenomena, it is possible to obtain better actionable intelligence, with more complementary information, and with more degrees of freedom, leading to improved solutions to complex and challenging problems. However, using information from multiple different channels, can have a downside, with massive data deluge from several redundant sources, with important information getting buried within the big data stores, and difficulties in making any sense out of it.

The two key questions that need to be addressed in these situations are: "Is it possible to exploit the complementary, competitive and collective information available from multiple modalities and sources effectively?", and if yes, "how to exploit this rich information synergistically"? In this talk, a novel computational collective intelligence (C2I) framework being developed in our research lab, based on a novel deep fusion paradigm, with integration of multisensory information from multiple disparate sources, and computational approaches based on Artificial Intelligence and Machine Learning techniques will be presented. The experimental validation and performance evaluation of the proposed computational algorithmic framework and its implementation as an open source technology platform, for several publicly available benchmark datasets corresponding to several real world problem scenarios, in security, health and environmental applications contexts, has resulted in promising outcomes, with several funded research projects, peer reviewed publications, algorithm workflows, and open source software tools - facilitating the vision of achieving global C2I systems, with humans and computers working together in harmony, and making this world a better place to live.



Prof. Xudong Jiang
Nanyang Technological University, Singapore

Biography: Xudong Jiang is currently in the School of Electrical and Electronic Engineering as Professor and Director of the Centre for Information Security. He received his Bachelor and Master degrees from the University of Electronic Science and Technology of China, in 1983 and 1986, and the Ph.D. degree from the University of German Federal Armed Forces, Hamburg, Germany, in 1997, all in electrical and electronic engineering. From 1986 to 1993, he was a Lecturer at the University of Electronic Science and Technology of China where he received two Science and Technology Awards from the Ministry of Electronic Industry of China. From 1993 to 1997, he was with the University of German Federal Armed Forces Hamburg, Germany, as a scientific assistant. From 1998 to 2002, he was with Nanyang Technological University, Singapore, as a Senior/Research Fellow where he developed a fingerprint verification algorithm that achieved the fastest speed with the second most accuracy in the International Fingerprint Verification Competition (FVC2000). From 2002 to 2004, he was a Lead Scientist and Head of the Biometrics Laboratory at the Institute for Infocomm Research, A*STAR, Singapore. Dr Jiang has published over 100 international conference and journal papers. He is also an inventor of 7 patents (3 of them are United States patents). Dr Jiang is a senior member of IEEE and has been serving as Editorial Board Member, Guest Editor and Reviewer of multiple international journals, and serving as Program Committee member, Keynote Speaker and Session Chair of multiple international conferences.

Title: Sparse Coding for Machine Vision and Its Recent Developments

Abstract: High data dimensionality and lack of human knowledge about the effective features to classify the data are two challenging problems in computer vision and pattern recognition. The sparse representation-based classifier (SRC) significantly differentiates itself from the other classifiers in three aspects. One is the utilization of training samples of all classes collaboratively to represent the query images and another is the sparse representation code that coincides with the general classification target. The last is the L1-norm minimization of the representation error that enables SRC to recognize query images heavily corrupted by outlier pixels and occlusions. These three merits of SRC lead to some encouraging and impressive image recognition results, which attract great interest in further research on SRC. Many extensions of SRC are proposed in recent years.

In this talk, we first help audience to have a deep understanding to the underline principles of SRC, i.e., how and why the sparse representation can be utilized to solve classification problems and the key advantages of this approach. The deep understanding to the SCR is necessary to analyze and find the problems and limitations of the SRC. These analyses and findings pave the way for us to investigate how the recent developments solve these problems and overcome the limitations of SRC, which bring the sparse representation-based image classification to a significantly higher level.

Plenary Speaker



Prof. Emanuel S. Grant
University of North Dakota, USA

Biography: Emanuel S. Grant received a B.Sc. from the University of the West Indies, MCS from Florida Atlantic University, and a Ph.D. from Colorado State University, all in Computer Science. Since 2008, he is an Associate Professor in the Department of Computer Science at the University of North Dakota, USA, where he started as an Assistant Professor in 2002. His research interests are in software development methodologies, formal specification techniques, domain-specific modeling languages, and model driven software development, and software engineering education. He is an adjunct professor at the Holy Angel University, Philippines, where he is conducting research in software engineering teaching with collaborators from HELP University College, Malaysia; III-Hyderabad, India; Singapore Management University, Singapore; Montclair State University, and University of North Carolina Wilmington of the USA; and the University of Technology, Jamaica. Emanuel is a member of the Association for Computing Machinery (ACM), Upsilon Pi Epsilon (UPE), and the Institute of Electrical and Electronics Engineers (IEEE).

Title: A Holistic Look the Future of Computer Science Education

Abstract: As one looks at the future of computer and communication, there is a focused on the end products of a long cycle of development. The future of computer is usually viewed in terms of the products and services that are available either as open-sourced or commercial. Society is bombarded with ads, infomercials of a futuristic world wherein human beings' live lives of technological comfort and convenience. This futuristic promise of technological accomplishment has to be tempered against the skills set of the available developers. Thus, one has to assess the educational foundation of the developers of these futuristic systems and services. More importantly, it is the current educational framework that will define the capabilities of the futuristic system developers. Consequently, the success of the future technology products and services is dependent on the current education, specifically at the undergraduate level of education.

Examination of today's computer science curricula paints a picture of multiple models of content, delivery, assessment, and certification. These aspects of computer science curricula span open source massive online courses (MOOC), hybrid courses, blended courses, and traditional courses that are offered by online and on-campus institutions. As one thinks of the future technologies, one has to examine today's education – Questions that have to be address include: Should there be a universal curriculum for computer science? Are students being adequately prepared to deliver the futuristic systems we envision? What changes should be made to current computer science education? These and other relevant questions will be addressed in this presentation, with an intent to proffer a realistic model of what is achievable, with respect to our education capabilities.

Daily Schedule of Events

April. 23 Monday	<i>Thyme</i>			
	Registration: Renne Gao, Ashily Qi Note: *Collecting conference materials *Certificate will be signed and issued after each session. *Accommodation not provided, and it's suggested to make an early reservation.			10:00-17:00
April. 24 Tuesday Morning	Clove&Lemongrass			
	Opening remarks: Dr. Girija Chetty University of Canberra, Canberra, Australia			9:00-9:05
	Keynote Speech I: Prof. Xudong Jiang Nanyang Technological University, Singapore			9:05-9:55
	<i>Coffee Break, Group Photo</i>			9:55-10:30
	Keynote Speech II: Dr. Girija Chetty University of Canberra, Canberra, Australia			10:30-11:20
	Plenary Speech I: Prof. Emanuel S. Grant University of North Dakota, USA			11:20-11:50
	Lunch			11:50-13:30
April. 24 Tuesday Afternoon	<i>Clove</i>	<i>Lemongrass</i>	<i>Thyme</i>	
	Session A-1 Computer Science and Applications	Session B-1 Data Communication and Information Security	Session C-1 Image processing technology and methods	13:30-15:00
	<i>Coffee Break, Poster Session</i>			15:00-15:30
	Session A-2 Computer Theory and Computation	Session B-2 Algorithm design and optimization	Session C-2 Information Network and Signal Processing	15:30-17:00
	Banquet @Evans, NUSS			17:00-18:30
April 25 Wednesday	<i>Optional One Day Visit</i>			9:00-17:00

Quick Glance of Presentations

Session A-1—Computer Science and Applications Venue: Clove Time: 13:30-15:00 Page: 16	
F031	Research and Application of GPRS, LoRa and NB-IoT in Environmental Monitoring
F034	Investigating the Factors Influencing the Participation in Ridesharing: The case of the Philippines
F036	Development of Efficient Network Analysis System for Revealing Potential Trade Risk Factors in e-Customs
F045-A	M-Learning in Improving Spraking Skills of English as A Foreign Language (EFL)
V006	Early Diagnosis of Alzheimer’s disease using Informative Features of Clinical Data
V016	Binarization of nonuniform illumination barcode
Session B-1—Data Communication and Information Security Venue: Lemongrass Time: 13:30-15:00 Page: 19	
F014	Security Architecture for Multi-Tenant Cloud Migration
F035	Do students with high grade point averages create better passwords?
F040	Concurrent Error Detection Scheme for Montgomery Multiplication over GF(2 ^m)
F011	AHP-based Resource Utilization Scheme at the Network Edge with Ad Hoc Network Gateway
F020	Investigating Individual’s Engagement in Malleable IT within Adaptive Structuration Theory for Individuals
F028	Research on Realization of Communication Method of Data Acquisition and Distribution Platform Based on Multiple Transmission Protocols
Session C-1—Image processing technology and methods Venue: Thyme Time: 13:30-15:00 Page: 22	
F015	Facial Expressions based Emotion Recognition through Feature Fusion Approach
V002	Benign and Malignant Solitary Pulmonary Nodules Classification Based on CNN and SVM
V010	A Color Segmentation and Feature Matching Algorithm for Car Brake Pad Image Classification
V014	Mobile Gesture Recognition

V021	Saliency-Guide Simplification for Point-Cloud Geometry
V028	Fatty Liver Identification with Novel Anisotropy Features Selected by PSO
Session A-2—Computer Theory and Computation Venue: Clove Time: 15:30-17:00 Page: 25	
F033	Visibility and Training in Open Source Software Adoption: A Case in Philippine Higher Education
V005	A Flow Experience Analysis on the Virtual Reality Artwork "La Camera Insabbiata"
V008	Emotional and Cognitive Assessment of Use of Functional Animation
F051	Re-design the BitTorrent Protocol in Next Generation Expressive Internet Architecture
V3001	Human-Machine Interface System for pre-diagnosis of diseases using Machine Learning
V013	Deep learning for real-time robust facial expression analysis
Session B-2—Algorithm design and optimization Venue: Lemongrass Time: 15:30-16:30 Page: 28	
F037	Segmentation of Domestic Tourist in Thailand by Combining Attribute Weight with Clustering Algorithm
F042	An improved ant colony algorithm based on Spark in TSP
F3016	A Novel Algorithm for Bitcoin Address Generation using Elliptical Curve Cryptography
F3014	S-commerce buying decision model for secondhand Products in Thailand: A conceptualFramework
Session C-2—Information Network and Signal Processing Venue: Thyme Time: 15:30-16:45 Page: 31	
F004	Efficient implementation of adaptive filter architecture using gate level modification for ECG denoising
F1002	A Novel Method for Blind Identification of a (n,n-1,m) Convolutional Code
F008	Decision Support System for RichDess Poultry and Egg Farm
F029	The Acceptance Model of M-Payment Using Smartphone Devices in Thailand: A Conceptual Framework
V024	A Novel Stereo Vision Sensor for Fast Moving Objects

Poster Session
Venue: lobby
Time: 15:00-15:30|Page: 34

1	F1003	An Attack and Defense Decision Algorithm Based on GA-IPD
2	F007	Research on Microblog short text clustering based on BK-means algorithm
3	F010	A hybrid fully homomorphic encryption mechanism for cloud computing data security protection
4	F021	Energy Efficient Power Allocation for Heterogeneous Cloud Radio Access Network with Partial CSI
5	F022	Proposing Pre Test-Case Testing Technique For Quality Nightly Buids
6	F030	A Novel Method for Forest Fire Detection Based on Convolutional Neural Network
7	F041	Loose hand gesture recognition based on relational features using a depth sensor
8	F044	Game and decision of the developer and the retailer under similar consignment mode
9	F047	A load balancing algorithm with dynamic adjustment of weight
10	F049	A Novel Method of Android Malware Detection Based on Ensemble Learning Algorithm
11	V001	Estimation of Point Cloud Object Pose using Particle Swarm Optimization
12	V020	Three-Dimensional Head Pose Estimation Using a Stereo Camera Arrangement
13	V018	Density-based Manifold Collective Clustering for Coherent Motion Detection

Oral Presentation

Session A-1—Computer Science and Applications

Session Chair:

Venue: Clove | Time:13:30-15:00

Note:

- * The certification of Oral Presentations will be awarded after each presentation.
- * For the Best Presentation of each session, it is encouraged to award to student author prior at the end of each session. Best presenter will be awarded at the dinner banquet.
- *To show the respect to other authors, especially to encourage the student authors, we strongly suggest you attend the whole session, the scheduled time for presentations might be changed due to unexpected situations, please come as early as you could.
- *Session Photo will be taken at the end of the session.



F031

Time: 13:30-13:45

Research and Application of GPRS, LoRa and NB-IoT in Environmental Monitoring

Mr. Yushuang Ma, Zhao Long, Rongjin Yang, Xiuhong Li, Song Qiao, Zhenwei Song, Zhang Yi
Beijing Normal University, China

With the development of industry, the environmental issue has drawn more and more attention. Currently, in order to monitoring and managing environment issues, we use real-time online monitoring equipment that is the way of remote communication to achieve data exchange between equipment and server. At the present there have also emerged a variety of wireless local area network communications technology. This article is based on the application of environmental monitoring, then comprehensive analyzed and compared the three mainstream LPWAN (low power wide area network) communication technologies: GPRS, LoRa and NB-IoT. Through research we get the conclusion., among them, LoRa technology that belongs to unlicensed band has obvious advantages in power consumption and cost. GPRS and NB-IoT work in the licensed frequency band, both of which have advantages in quality of service (QoS), latency, reliability and distance.



F034

Time: 13:45-14:00

Investigating the Factors Influencing the Participation in Ridesharing: The case of the Philippines

Ms. Laiza L. Limpin
De La Salle Universtiy – Manila, Philippines

The sharing economy, which leverages information and communication technologies (ICT) for the sharing of assets and services, has made significant inroads in ASEAN countries, including the Philippines, which in 2015 became

the first country to create and implement a regulatory framework for ridesharing through transportation network company (TNC) apps like Uber. However, despite its growing practical importance and wide acceptance in the country, there is a gap in the literature which focuses on motivational factors influencing the participation in sharing activities. Therefore, this paper employs a quantitative approach to investigate the people's motivation to engage in ride-sharing in the Philippine setting. The result of an online survey which gathered 215 responses from registered Uber users showed that people's attitude towards ride-sharing activities are positively influenced by some factors such as enjoyment, sustainability, reputation and economic benefits. However, the result also reveals that a positive attitude influenced by reputation and sustainability does not guarantee actual participation in ride-sharing. Moreover, people who have a positive perception towards ride-sharing may find themselves using the service. Further studies and implications on the improvement of ride-sharing services are discussed.



F036

Time: 14:00-14:15

Development of Efficient Network Analysis System for Revealing Potential Trade Risk Factors in e-Customs

Dr. Dongmin Seo, Min-Ho Lee

Korea Institute of Science and Technology Information, South Korea

Recently, various network analysis methods has been utilized to reveal undisclosed knowledge in a variety of fields. In particular, these methods are used to reveal potential trade risk factors in e-Customs. However, existing methods do not provide a fast response time to user queries, mainly due to the large size of the data and the complexity of relationships between the data in e-Custom. In this paper, we propose an efficient network analysis system for revealing potential trade risk factors in e-Custom. The system proposes an efficient subgraph matching method and visualization tool to find the relationships between the data in a network. It quickly finds complicated relationships and dramatically reduces the number of unnecessary searches. Also, to verify the superiority of our method, we compare our method with existing method in various experiments.



F045-A

Time: 14:15-14:30

M-Learning in Improving Speaking Skills of English as A Foreign Language (EFL)

Mr. Abdulrahman Nayyaf B Almarshadi, Azman Bin Bidin, Aidah Binti AbdulKarim, Mohd Khalid Bin Mohamad Nasir

National University of Malaysia, Malaysia

This study considers the ever-increasing importance of mobile devices in daily life and the spiralling reliance of people on them, to the extent that individuals use their mobile gadgets these days as a tool for learning precisely what they want to learn, exactly when they feel the need to learn, and wherever they happen to be at the time. This applies especially to students who are trying to learn a foreign language and wish to improve their performance in that language. Such students tend to use their mobiles as both a communication tool and a means of targeting learning in the language they study through Mobile-Assisted

Language Learning (MALL). The research objective was to identify the role that mobiles can play in enhancing ability of speaking English in a correct and proper manner. Other studies previously carried out by researchers were considered, and their findings and conclusions summarized. A directed student survey was designed and conducted to obtain accurate and relevant data. The data obtained were analyzed, and confirmed that M-Learning is effective and pertinent to speaking English learned as a foreign language in an improved way.



V006

Time: 14:30-14:45

Early Diagnosis of Alzheimer's disease using Informative Features of Clinical Data

Ms. Aunsia Khan, Muhammad Usman
Shaheed Zulfikar Ali Bhutto Institute of Science and Technology (SZABIST)
Islamabad Campus, PAKISTAN

Diagnosing Alzheimer's disease (AD) is usually difficult, especially when the disease is in its early stage. However, treatment is most likely to be effective at this stage; bringing an advantage in improving the life of patients, diagnosis process. After years of research, still little is known about its detailed mechanism. The AD patients undergo different physical examinations, brain scans, and laboratory tests etc. that require them to physically visit the medical center multiple times. Such visits further result in each patient's massive data stored for clinical diagnosis. This elevates the possibility of using informative rich variables from this data for the early detection of AD with the help of Machine Learning (ML) techniques. However, the previously proposed models endure a number of limitations which place strong barriers towards the direct applicability of such models for accurate prediction. A number of classifiers have been utilized in the literature but none of the previous work utilized the two major categories of variables namely clinical diagnosis and clinical judgment. In this paper, we utilize these two categories of data and perform a comparative evaluation of the predominant machine learning algorithms in terms of prediction accuracy, precision, recall (AUC) and training time. Our experimental results revealed that Bayesian based classifiers improve AD detection accuracy and allows the meaningful interpretation of predictive model which assists in early prognosis of AD for each patient.



V016

Time: 14:45-15:00

Binarization of nonuniform illumination barcode

Zhikui Duan, Yongxiang Zhang, **Mr. Shiren Li**
Sun Yat-Sen University, China

This paper proposes a novel binarization approach, appropriate for nonuniform illumination barcode. The proposed method firstly clusters pixels of the image into two categories, which is black and white. Next, the variations of these two parts are calculated and binarization is conducted in the part with less variation. Finally, the uneven illumination part is established and recovered in the part with greater variation through both gray-value information and spatial information. The experimental results show that the proposed approach is effective for the uneven illumination barcode

Session B-1—Data Communication and Information Security

Session Chair:

Venue: Lemongrass | Time:13:30-15:00

Note:

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F014

Time: 13:30-13:45

Security Architecture for Multi-Tenant Cloud Migration

Manikandasaran S S, **Mr. Raja S**
Christhu Raj College, Panjappur, Tiruchirappalli, India

In today's competitive IT world Cloud Computing is the word rolling around in all activities of IT companies. Thus, everyone is transforming their infrastructure from legacy infrastructure to cloud computing which is very feasible, and Cost effective. Finally, it can scale up and scale down instantly on demand basis. When companies think about the cloud adoption, security is the biggest issue and data is stored in software defined environment. This paper addresses security parameters which need to be mainly considered for cloud migration. Cloud service provider is responsible for building fence around the underlying infrastructure i.e. Compute, network and storage. Security is the main controller for adopting the cloud environment. In Cloud computing, security issues are identified with different layers. In this paper, new architecture is proposed for achieving data confidentiality and data integrity in multitenant workload migration into cloud. This architecture ensures that tenant has secure relationship between source and destination data centers via staging area. This staging area has capability to migrate the workload in different hypervisors. Workload meets security guidelines through this migration process from beginning to end.



F035

Time: 13:45-14:00

Do Students with High Grade Point Averages Create Better Passwords?

Ms. Josephine M. de la Cuesta
Asia Pacific College, Philippines

Technological advances made possible different ways to secure data and information. Passwords though remain to be the popular choice to authenticate users for its ease of use and, for the organization, it is inexpensive to administer. Studies show however that passwords have limitations, which is addressed by defining stricter and more complex password creation policies. User reactions to such policies vary, from delaying conformance to opting for ease and convenience when creating passwords, with little consideration for the resulting

security risks. Studies have likewise been made regarding the factors that affect password creation, such factors mostly being behavioral in nature. This study intends to determine if Asia Pacific College students' academic performance positively or negatively impacts password creation. In compliance with the National Institute of Standards and Technology's (NIST) Digital Identity Guidelines, the password of each student logging in to the information system was captured and recorded over a duration that included peak periods of system activity. These passwords were hashed and compared with a corpus of 320 million breached passwords, to identify which were compromised and not compromised. To this list, the grade point average (GPA) of each student was added. The resulting data set, with student information, password status and GPA data were analyzed. Statistical analysis shows that there is a significant difference between the compromised and not compromised group in terms of the mean of the GPA. Academic performance may positively impact password creation. The study can be expanded to further test this conclusion.



F040

Time: 14:00-14:15

Concurrent Error Detection Scheme for Montgomery Multiplication over $GF(2^m)$

Kee-Won Kim, **Mr. Hyun-Ho Lee**, Seung-Hoon Kim
Dankook University, Republic of Korea

Finite fields over $GF(2^m)$ have great interest for their applications like cryptography, where it is important to detect an error. Multiplication is one of the most crucial operations and the concurrent error detection scheme for multiplication over finite fields is very useful to increase the reliability in such application. In this paper, we propose a concurrent error detection scheme to be efficiently employed for the Montgomery multiplication over $GF(2^m)$. Our scheme uses two Montgomery factors for deriving an efficient concurrent error detection. We expect that the multiplier with concurrent error detection using our scheme can save about 50% time complexity as compared to the existing structures. In future research, we will implement the detailed architecture to compute Montgomery multiplications with concurrent error detection. .



F011

Time: 14:15-14:30

AHP-based Resource Utilization Scheme at the Network Edge with Ad Hoc Network Gateway

Mr. Waesomesudin Waedorkor, Suntorn Witosurapot
Prince of Songkla University, Thailand

A sensitive problem in active learning classroom affecting the performance of Internet video streams is caused from the network degradation during the times of overloaded traffics. In this paper, we investigate how such a problem can be solved by a mean of edge computing system running at a gateway device so that virtualized services for transcoded video streams can be offered at the local ad-hoc network. In addition, we explore the use of multi-criteria decision making mechanism with AHP method for suggesting sensible network resources that can yield possible video qualities. Based on the result obtained by empirical network traces on a video clip transfer, our proposed solution selects lower levels of network utilizations than those of DASH server for similar video resolutions and frame-rates. Hence, it is beneficial for empowering the teacher to deploy flexible

network policies in times of congestion at ease so that the residue of network resource can be given to some other essential tasks.



F020

Time: 14:30-14:45

Investigating Individual's Engagement in Malleable IT within Adaptive Structuration Theory for Individuals

Ms. Hazel A. Trapero

De La Salle University, Philippines

Innovations are already part of people's daily lives, especially the new generations of cellular phones (smartphones), which is one of the designed malleable information technology (IT) devices. With this innovation, along with different views on individuals' engagement in malleable IT and work productivity, this study aimed to investigate and explore what factors in the users and technology contribute to an individual's adaptation to "malleable IT" and how their use of this IT impacts their individual task performance within the Adaptive Structuration Theory for Individuals (ASTI) by Schmitz, Teng, and Webb [2] in the Philippine setting, with the use of a survey instrument adapted from Schmitz et al. A quantitative analysis of the survey results revealed that innovativeness, creativeness, accumulative affect, and confidence in using the smartphones are influential in the workplace, not on how long the smartphone is at hand, age, gender nor one's educational attainment. However, this study just focused on what individuals can do with the use of malleable IT to achieve a good performance outcome but not the circumstances on how outcomes boost individual's characteristics and engagement in performing the tasks. Further studies on what can continuously motivate one's innovativeness and improve one's confidence are recommended, thus, completing the structuration theory cycle.



F028

Time: 14:45-15:00

Research on Realization of Communication Method of Data Acquisition and Distribution Platform Based on Multiple Transmission Protocols

Mr. Zhao Long, Yushuang Ma, Rongjin Yang, Xiuhong Li, Song Qiao, Zhenwei Song, Zhang Yi

Beijing Normal University, China

This paper mainly introduces the advantages and disadvantages of adopting different data transmission protocols in order to realize data communication in the data acquisition and distribution platform of wireless sensor network. The TCP connections based on IPv4 protocol and IPv6 protocol and the transmission efficiency of the HTTP-based stateless transfer protocol in practical applications are studied and compared in the corresponding application scenarios. The transmission header based on the IPv4 protocol is more complicated than IPv6. The IPv6 address space is huge and the terminal address allocation of the mass terminal can be realized. TCP connections maintain two-way communication between the client and the server, but consume too much for the server, while stateless protocol HTTP consumes less for the server and its disadvantage is the inability to record two-way communications.

Session C-1—Image processing technology and methods

Session Chair: Assoc. Prof. Apostolos Tsagaris

Venue: Thyme | Time:13:30-15:00

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F015

Time: 13:30-13:45

Facial Expressions based Emotion Recognition through Feature Fusion Approach

Assoc. Prof. Bharati Dixit, Arun Gaikwad
Sinhgad College of Engineering, Pune, India

Human computer interaction is need of the time and has wide application range. Automatic emotion recognition is one of the important task which can be implemented through HCI systems. Facial expressions based non verbal approach of emotion recognition is experimented for the work. Extracted features are fusion of features obtained through LDN and PCA. Extracted features are provided to feed forward neural network for emotion classification. The experimentation is carried out for CK+ and JAFFE database. The emotion recognition accuracy obtained for CK+ database is 82.07% and for JAFFE database is 84.22%. FAR - false acceptance rate and FRR - false rejection rate obtained for CK+ database is 4.18% and 17.92% respectively. FAR and FRR obtained for JAFFE database is 3.60% and 15.77% respectively.



V002

Time: 13:45-14:00

Benign and Malignant Solitary Pulmonary Nodules Classification Based on CNN and SVM

Prof. Lu Liu, Yapeng Liu, Hongyuan Zhao
Harbin University of Science & Technology, China

In order to assist the doctors to diagnose lung cancer and improve the classification accuracy of benign and malignant pulmonary nodules, this paper proposes a novel intelligent diagnosis model which is aiming at CT imaging features of pulmonary nodules. Specifically, this model uses the convolutional neural network to extract the features of the pulmonary nodules, then uses the principal component analysis to reduce the dimension of the extracted features, and finally classifies the final features with particle swarm optimization optimized SVM. With regard to the pulmonary nodules extracted from the LIDC-IDRI database, 400 pulmonary nodules are used for training and 310 pulmonary nodules are used for testing, the classification accuracy rate is

91.94%. This model can provide objective, convenient and efficient auxiliary method for solving the classification problem of benign and malignant pulmonary nodules in medical images.

V010

Time: 14:00-14:15

A Color Segmentation and Feature Matching Algorithm for Car Brake Pad Image Classification

Mr. Lei Zhao, Wei Huang, Zhenguo Sun
Tsinghua University, China

During the manufacturing of car brake pads, classification of brake pads with different Appearance is an important process, which at present is done mostly through the human eye detection. In this paper, an intelligent car brake pad image classification algorithm based on machine vision technology is proposed. Firstly by using the high-resolution industrial camera with coaxial light source, the image of brake pad on the conveyor is acquired. Then a HSV color space conversion is conducted on the original image. By thresholding the H or S channel of the image and morphological processing, the brake pad foreground is accurately segmented. Following the segmentation, the Hu moments of the brake pad region is extracted as a shape descriptor of the pad. At last the 7-dimensional Hu feature is compared to the templates of different kinds of brake pads to find the best match. Experiments show that the proposed algorithm can successfully segment the brake pads from the dark indistinct background and the classification accuracy reaches 81.7%



V014

Time: 14:15-14:30

Mobile Gesture Recognition

Assoc. Prof. Apostolos Tsagaris, Dimitrios Trigkas
Department of Automation Engineering, Alexander Technological Educational Institute of Thessaloniki, Greece

This paper presents a methodology for a real time mobile gesture recognition system. It presents a new kind of Human - Machine interaction through mobile devices (microcontroller) and without the use of typical computer system. With the help of real time gesture recognition technologies and by using camera signal processing (web) the interaction with robotics and mechatronics systems in general can be achieved. The gestures will be continuously followed and can be directly mapped with commands of mechatronic systems such as start moving, stop moving, forward moving, backward moving etc. The proposed methodology relies on the finger gesture data acquisition, hand segmentation, fingertips localization/ identification and high-level feature extraction



V021

Time: 14:30-14:45

Saliency-Guide Simplification for Point-Cloud Geometry

Ms. Lixia Wang, Fei Wang, Feng Yan, Yu Guo
Xi'an Jiaotong University, China

To efficiently simplify large-scale point clouds and keep geometric details as many as possible, we propose a novel operator guided by point-saliency. Firstly,

we adopt a site entropy rate algorithm to calculate the saliency value which represents the significance of every point. Intuitively, the point of higher value should be retained. We introduce the saliency value as a weight term to locally optical projection (LOP) operator. What's more, we incorporate locally adaptive density weight into our operator to deal with the highly non-uniformed point clouds. Compared with other methods, our approach preserves more spatial information when down sample a point cloud to a certain number of points. Experimental results also show that our method is highly robust to noise and outliers.



V028

Time: 14:45-15:00

Fatty Liver Identification with Novel Anisotropy Features Selected by PSO

Nivedita Neogi, **Assoc. Prof. Arunabha Adhikari**, Madhusudan Roy
West Bengal State University

This paper proposes a method to classify ultrasound (US) images of normal and fatty human liver using pattern recognition tools. For classification 32 simple novel features, namely, anisotropy features, proposed by authors, are compared with traditional 200 GLCM features. The extracted features are selected by two methods: i) ranking (Welch's test) and ii) meta heuristic (Particle Swarm Optimisation (PSO)). These selected features are fed into multilayer perceptron (MLP) classifier. It is shown that only 6 anisotropy features, selected by PSO when fed into MLP classifier yield 100% accuracy and the proposed algorithm is much less computational intensive compared to ones found in literature.

Coffee Break&Poster Session

15:00-15:30

Session A-2—Computer Theory and Computation

Session Chair: Prof. Vladimir Khryashchev

Venue: Clove | Time: 15:30-17:00

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F033

Time: 15:30-15:45

Visibility and Training in Open Source Software Adoption: A Case in Philippine Higher Education

Mr. Ryan Ebarido

Jose Rizal University, Philippines

Open Source Software (OSS) has been widely used in the educational environment largely due to its reduced cost of ownership. While OSS has evolved over the years, challenges exist in its implementation and wide adoption. Foremost among these detriments is the lack of available skills across industries. Since future users of this technology will settle in an organizational ecosystem where proprietary and OSS technologies coexist, it is vital to understand their learning environment where they initially acquire their technology skills. The University implements courses that champion the use of open source technologies within its curricula. However, other courses are also anchored on technologies that are proprietary. This study is based on the premise that training or the learning experience and visibility or the prevalence of OSS in the environment influences its adoption among students. Empirical evidences explore the relationship of visibility and training in the adoption of OSS from the perspectives of students in a Philippine university. A modified Technology Acceptance Model incorporating additional constructs is validated using Partial Least Squares – Structural Equation Model. Results of the study confirms the applicability of TAM in this study, training has positive influence on both perceived ease of use and perceived usefulness and visibility has a positive influence on perceived ease of use towards initial acceptability of students of OSS. Educational implications of the study are discussed, limitations are acknowledged and research frontiers are recommended.



V005

Time: 15:45-16:00

A Flow Experience Analysis on the Virtual Reality Artwork "La Camera Insabbiata"

Dr. Meng-Hsuan Huang, Saiau-Yue Tsau

National Taipei University of Technology, Taiwan

The virtual world is a manner in which people can perceive an alternate form of beauty. In it, users can interact through their senses of sight, hearing, and touch; their body perception briefly escapes from the real world, as if they were completely immersed in

the illusion. The present study focused on the artwork La Camera Insabbiata, an award-winning virtual reality (VR) artwork. Based on the flow theory proposed by Csikszentmihalyi, this study analyzed the flow experience of the artwork. The findings revealed that a significant difference exists in the degrees of “skills,” “control,” and “feedback” among various age groups; a significant difference exists in the degrees of “Concentration” and “feedback” among various previous VR experience groups. The findings also indicated that no significant difference exists in the degree of flow experience degree between genders. Therefore, La Camera Insabbiata can be accepted by both men and women, making it easy to promote the artwork to the public. Experiencing this artwork through “flying” provides viewers with a sense of presence. During a VR experience, viewers are immersed in the creators’ consciousness, because the viewer becomes a co-creator of the artwork. In this respect, the mind of the creator and that of the viewers can be said to merge into one.



V008

Time: 16:00-16:15

Emotional and Cognitive Assessment of Use of Functional Animation

Ms. Jiayang Ma, Chun-Ching Chen, Yi-Chun Lin
National Taipei University of Technology, Taiwan

The animation transition in the interface can be divided into two parts: functional animation and delightful animation. In past studies, "function" and "emotion" are often viewed independently. This study is to, with functional transition effect as the research content, investigate whether the cognitive load generated by operation will affect the use of emotions. The author selects 4 experimental samples of animation transition that conform to this study, gets the emotive information in the way of combining the testee’s actual operation and subjective questionnaire, and seek the association between cognitive load and emotion, and explore the emotional connection generated in the process of using different types of transitions. The experimental results show that the six faces in the cognitive load will respectively produce unequal connections with pleasure, arousal and dominance at the emotional level, and besides, there will exist emotional and cognitive differences due to different characteristics of animation transition.



F051

Time: 16:15-16:30

Re-design the BitTorrent Protocol in Next Generation Expressive Internet Architecture

Mr. Ziqian Meng, Zhong Chen, Zhi Guan
Peking University, China

As a popular peer-to-peer protocol, BitTorrent is one of the most important methods for file sharing and distributing on today’s Internet. However, the BitTorrent protocol is built entirely at the application level. Without the support of network layer, peers in BitTorrent protocol have to exchange data content through TCP connections and BitTorrent applications has to handle every procedure in the whole file sharing process. As peer-to-peer has become an essential way for people to share and distribute files across the Internet, we believe it should be natively supported mechanism in the future Internet Architecture. The eXpressive Internet Architecture (XIA) is one of three FIA (Future Internet Architecture) projects funded by US NSF. As a clean-slate network architecture, XIA has some novel features such as evolvability, flexible routing, and in-network cache for content delivery. In this paper, we propose a practical design of BitTorrent protocol implementation on XIA to explore and rethink the peer-to-peer file

sharing mechanism in the future Internet architecture.



V3001

Time: 16:30-16:45

Human-Machine Interface System for pre-diagnosis of diseases using Machine Learning

Prajval Gupta, Angel Suryavanshi, Saumil Maheshwari, Anupam Shukla, **Assoc. Prof. Ritu Tiwari**
ABV-IIITM

The rapid growth of applications of latest information technology into the field of medical sciences have founded the idea to develop such a platform through which pre-diagnosis of diseases could be easy, efficient and less time consuming. This paper talks about two frameworks designed using machine learning algorithms such as ANN, SVM and Decision Tree Induction to develop the models through which a number of diseases can be pre-diagnosed simultaneously with the analysis of symptoms initially recorded in the patient's body. These symptoms and physical readings have been taken as inputs to produce the output i.e the predicted disease. The most important factors contributing for multiple disease prediction were determined such as age, sex, body temperature, blood pressure and symptoms like nausea, vomiting and fever. Data sets were collected from different hospitals in India during this research. All the models used were able to perform with an accuracy above 85%.



V013

Time: 16:45-17:00

Deep learning for real-time robust facial expression analysis

Prof. Vladimir Khryashchev, Leonid Ivanovsky, Andrey Priorov
P.G. Demidov Yaroslavl State University, Russia

The aim of this investigation is to classify real-life facial images into one of six types of emotions. For solving this problem, we propose to use deep machine learning algorithms and convolutional neural network (CNN). CNN is a modern type of neural network, which allows for rapid detection of various objects, as well as to make an effective object classification. For acceleration of CNN learning stage, we use supercomputer NVIDIA DGX-1. This process was implemented in parallel on a large number of independent streams on GPU. Numerical experiments for algorithms were performed on the images of Multi-Pie image database with various lighting of scene and angle rotation of head. For developed models, several metrics of quality were calculated. The designing algorithm was used in real-time video processing in human-computer interaction systems. Moreover, expression recognition can apply in such fields as retail analysis, security, video games, animations, psychiatry, automobile safety, educational software, etc

Session B-2—Algorithm design and optimization

Session Chair:

Venue: Lemongrass | Time:15:30-16:30

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F037

Time: 15:30-15:45

Segmentation of Domestic Tourist in Thailand by Combining Attribute Weight with Clustering Algorithm

Ms. Prapassorn Hayamin, Anongnart Srivihok

Department of Computer Science, Faculty of Science, Kasetsart University, Thailand.

The tourism industry is growing up and competing relatively high. In Thailand, tourism is one of the main industries that can generate a large amount of domestic turnover rate. And tourist information in Thailand is stored in large quantities. It is difficult to understand the needs of tourists. Therefore, this study presents segmentation of domestic tourist in Thailand by combining attribute weight with clustering algorithm. The study used two step algorithms, in the first step, Self-Organizing Maps (SOM) was used to determine the optimum number of clusters which an input parameter to K-Means and Fuzzy C-Means. Then, using SOM, K-Means and Fuzzy C-Means algorithms combine with feature weighting techniques based on Correlation Coefficient (CC), Information Gain Ratio (IGR), Gini Index and Principal Components Analysis (PCA) for clustering the tourists clusters. The quality of cluster was measured by Davies Bouldin Index (DB), Root Mean Square Standard Deviation (RMSSTD) and R Square (RS). The results of this study might be used for tourism management and entrepreneur tour and travel can be used for decision making and business planning.



F042

Time: 15:45-16:00

An Improved ant Colony Algorithm Based on Spark in TSP

Mr. Qifan Wu, Qingsheng Zhu
Chongqing University, China

Traditional ant colony algorithm is easy to fall into local optimum and has slow convergence rate, Moreover, its speed of solving is not satisfactory in above medium scale traveling salesman problem. In order to improve the above problem, a parallel ant colony algorithm based on the coarse granularity of Spark is proposed in this paper. Based on the maximum and minimum ant colony

system, this method is implemented in parallel with the Spark framework. At the same time, the following improvements have been made: By using the local search technology with three acceleration functions, the ability of the algorithm to jump out of the local optimal solution is greatly enhanced. Meanwhile, the termination condition of the traditional ant colony algorithm is modified, and the information entropy is used as the criterion of the algorithm convergence judgment, reducing the number of iterations and saving time. The experimental results show that the new parallel ant colony algorithm has a greater improvement than the traditional ant colony algorithm in the solving precision and solving speed.



F3016

Time: 16:00-16:15

A Novel Algorithm for Bitcoin Address Generation using Elliptical Curve Cryptography

Prof. Pritam Gajkumar Shah, Assoc. Prof. Huwida Said, Ramesh K. B., Namita Pritam Shah
Jain University Bangalore, India
Zayed University, Dubai, United Arab Emirates



Bitcoin is a digital currency having no central bank and operates on peer to peer network. Bitcoin helps account users for anonymous transactions with very less processing fee. To trade Bitcoins user must have account called as Bitcoin address. This paper illustrate in depth process of generating Bitcoin address with modified Elliptical Curve Digital Signature algorithm. The Type of Elliptical Curve used in this paper is NIST recommended P192 curve over prime field.



F3014

Time: 16:15-16:30

S-commerce buying decision model for secondhand Products in Thailand: A conceptualFramework

Ms. Tharinee Auttaput, Wornchanok Chiyasoonthorn, and Singha Chaveesuk

Faculty of Administration and Management, King Mongkut' s Institute of Technology Ladkrabang, Bangkok, Thailand

In Thailand, social commerce (s-commerce) is a new development in e-commerce that uses social media to empower customers to interact with sellers and other buyers on the Internet. The advancement of Web technology and social media platform gives rise to s-commerce which can act like a mechanism for businesses and customers to interact. S-commerce reestablished the social aspect of shopping in e-commerce. It especially increases the amount of social behavior in the online environment. In addition, the nature of the second-hand economy has changed significantly with the beginning of online technology, services, and platforms, i.e., the way second-hand product trade is implanted has changed by s-commerce. Inevitably, the related issues of social network marketing and trust between buyers and sellers have been also been a focus of attention for researchers in order to expand the current understanding of this phenomenon, especially regarding technological marketing and users' trust. Accordingly, the main objective of this study was to systematically review and develop a conceptual framework of s-commerce buying decision model for second-hand product trade in Thailand. This study theorizes the nature of social aspect of

online s-commerce behavior. Researchers employ a set of digital marketing mix and a trust model for consumers' Internet shopping that could explain current online purchase behavior. Finally, this proposed model provides potential factors that affect the buying-decision behaviors of second-hand products through s-commerce in Thailand.

Session C-2—Information Network and Signal Processing

Session Chair: Prof. Emanuel S. Grant

Venue: Thyme | Time:15:30-16:45

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F004

Time: 15:30-15:45

Efficient implementation of adaptive filter architecture using gate level modification for ECG Denoising

Prof. V. Kavitha, P. Kaviya Priya and Tha. Sugapriyaa
M. Kumarasamy College of Engineering, India

A versatile channel assumes a critical part in clamor cancelation application. This paper introduces the gate level modified architectures for adaptive noise cancellation (ANC) using Matlab Simulink and Xilinx System generator and its implementation in XUP FPGA board. Gate level modification are done in Recursive Least square (RLS) filters to enhance the Signal to Noise ratio (SNR) and to optimize the VLSI parameters. The designed gate level modified structures are applied for noise cancellation in ECG Signals and Speech signals. The proposed gate level modified architectures shows better improvement in SNR, area and delay optimization respectively. From the results, it is clear that gate level modified RLS shows SNR improvement of 1.47% and 4.52% and shows area and combinational path reduction of 25.1% and 0.4% than basic RLS for 8-Tap filter respectively.



F1002

Time: 15:45-16:00

A Novel Method for Blind Identification of a $(n, n-1, m)$ Convolutional Code

Mr. Shu Nan Han, Min Zhang
National University of Defense Technology, China.

The existing methods for identification of a $(n, n-1, m)$ convolutional code are not applicable in the cases of high bit error rates or need a large amount of computation. To overcome the limitations, a novel blind identification method is proposed. First, based on the parity check equation set, the parity check vector of a convolutional code is estimated by using the proposed recursive algorithm. Second, due to the orthogonality between the parity check matrix and the generator matrix, a set of polynomial generator bases are obtained. Finally, the canonical generator matrix is reconstructed by using the polynomial generator bases. Experimental results show the method is effective. The method has high

robustness to bit errors. It does not need to search for the parity check vector exhaustively, and therefore its computational complexity is much lower than that of the existing method.



F008

Time: 16:00-16:15

Decision Support System for RichDess Poultry and Egg Farm

Shaun Cassidy Calagos, Michelle Renee Ching, **Ms. Katrina Michaela Delfin**, Carlos Miguel Dignadice, Joshua Macuja
De La Salle University, Philippines

The most important enterprise in the world is Agriculture for it provides human's basic needs of survival. Because of the advancements in technology today, management of agricultural data and information related to the performance of livestock is vital for successful farms to compete in the market. This could be achieved through accurate Farm Management Information Systems that can provide decision support to achieve sustainability, optimum efficiency, and effectivity. Through Agile and Scrum development frameworks, the researchers specifically developed a Decision Support System for RichDess Poultry and Egg Farm that aids its farm employees in storing and utilizing data that would provide the necessary information to the farm manager in creating key business decisions. The system aims to maximize the assets and minimize the expenses of the farm through the four main modules: Poultry and Egg Management module, Pig Management module, Feeds and Medicine Inventory Tracking module, and Financial Management module. The system can suggest the best chicken breed to purchase based on each chicken breed's total egg production; moreover, it can suggest the type of medicine to cure certain illnesses based on past data. Additionally, it can monitor the weight and breeding status of the pigs. It can also display a clear picture of the farm's cash flow for easy decision-making and it can track the quantity of feeds and medicines used.



F029

Time: 16:15-16:30

The Acceptance Model of M-Payment Using Smartphone Devices in Thailand: A Conceptual Framework

Mr. Parisgawin Nakwari, Worapoj Kreesuradej, Singha Chaveesuk
King Mongkut's Institute of Technology Ladkrabang, Thailand

In this paper, we have proposed the M-payment method using the smartphone applications, from which all electronic transactions such as purchasing, sales and the provision of other financial services can be applied. This is the investigation of the UTAUT2 extended theory that can be more appropriate for the consumers. The UTAUT2 extended theory is integrated with the service quality, which can be used to examine the acceptance potential of the M-Payment user by smartphone devices. The outcomes of this study will benefit the financial industry in their effort to initiate an extensive online-payment process in all users, especially, in Thailand.



V024

Time: 16:30-16:45

A Novel Stereo Vision Sensor for Fast Moving Objects

Ms. Suining Wu, Zhen Liu, Qun Wu, Yiming Ren
Beihang University, China

In this paper, we propose a novel stereo vision sensor for the automatic 3-D dynamic surface measurement, which is able to simultaneously acquire the 2-D scan image and the 3-D reconstruction results. The proposed system mainly concludes a line scan camera, a frame camera and two line lasers. Due to the application of line lasers, the proposed system is able to work accurate and stable under complex lighting condition. About our system, the view plane of line scan camera and the light plane of line laser are in coincidence. First, the calibration of intrinsic, extrinsic parameters and the light plane coefficients are obtained. Epipolar line is calculated to extract the accurate position of image point corresponding to each pixel of line scan camera. Finally, the 3-D shape is reconstructed according to binocular stereo vision model. The 2-D image and 3-D façade information can be synchronously acquired by scanning over objects. Physical experiments show that the proposed stereo vision sensor can provide robust and accurate results

Poster Presentation

Venue: Lobby | Time: 15:00-15:30



F1003

An Attack and Defense Decision Algorithm Based on GA-IPD

Assoc. Prof. Kun Zhang, Ke Li, Quan Zhao, Peipei Liu
Northwestern Polytechnical University, China

In order to solve the problem that exist in the process of pilot decision in the air-combat environment, it's proposed that the attack and defense decision model based on IPD uses the GA to find the optimal solution in this paper. Meanwhile, the attack and defense decision algorithm based on GA is presented and used to find the optimal strategies in air-combat. These methods make the process become effective, intelligent and easy, then the model using GA and IPD of game theory at the same time is used to simulate the process of decision. The results of simulation indicate that the GA and game theory is suitable for the process of decision in the air-combat environment.



F007

Microblog Text Clustering based on BK-means algorithm

Ms. Qianru Li, Xiuliang Mo, Chundong Wang
Tianjin University of Technology, China

In recent years, the increasing popularity of social media such as WeChat and Weibo has facilitated the communication among people. However, due to the characteristics like large scale, fast propagation, low quality and diverse modalities of social short texts, the short text clustering faces the challenge of sparse features, high dimension and noise interference. The traditional clustering method based on vector space model is not good for short text data processing. With the improvement of K-means algorithm, this paper proposes a short-text clustering algorithm named BK-means which alleviates the effect of data sparseness. Firstly, we preprocess the word set by means of word segmentation, stop-of-word and other operations, then extract the biterm using the BTM to model the document, and get the document-topic, the topic-word distribution matrix. Finally, we use the proposed BK-means algorithm to cluster short texts of documents represented by vectors. Experiments on the short text data of Sina Weibo have proved that the short text clustering algorithm based on BK-means is superior to the traditional one, and both the F-measure and the purity are improved.

F010

A Hybrid Fully Homomorphic Encryption Mechanism For Cloud Computing Data Security Protection

Mr. Dibin Shan, Xuehui Du, Wenjuan Wang, Nan Wang
Zhengzhou Institute of Information Science and Technology, China

The Fully homomorphic encryption algorithm can make cipher-text

computation and protect the confidentiality of data, but the existing asymmetrical approaches are inefficient and are not practical for cloud data applications, while the symmetric approaches has low security. In this paper, based on the existing algorithms, we proposes a hybrid fully homomorphic encryption mechanism combining symmetric encryption and asymmetric encryption. Experimental and analysis results show that the proposed mechanism reduces the cipher-text storage overhead and execution time, which also can prevent the strong attack.



F021

Energy Efficient Power Allocation for Heterogeneous Cloud Radio Access Network with Partial CSI

Mr. Jiakuo Zuo, Chao Zuo

Nanjing University of Posts and Telecommunications, China

In this paper, we consider power allocation for heterogeneous cloud radio access network (HC-RAN). All the channels in HC-RAN are assumed to be block fading and only the statistical information of these channels can be acquired by the based band unit (BBU) instead of perfect channel state information (CSI). The power of the users are optimized via maximization of the averaged energy efficiency (EE) of HC-RAN, under outage probability constraints and average transmit power constraint. First, the original nonconvex optimization problem is transformed into an equivalent optimization problem in subtractive form. Then, an efficient two loop iterative power allocation scheme is proposed. Simulation results demonstrate the improvements in terms of EE by using the proposed power allocation scheme compared with the traditional ergodic rate maximization algorithm.

F022

Proposing Pre Test-Case Testing Technique for Quality Nightly Builds

Mr. Usman Zuberi, M Asim Ali

Head of Process Engineering, VentureDive, Karachi, Pakistan

This paper intends to highlight a problem that exist in list of local and foreign software firms related to releasing a quality internal build to quality assurance (QA) teams. The problem that exists is that the developers usually claim that they have executed a unit test while releasing a build to QA, where in actual, the execution of unit test cannot ensure absence of obvious and basic bugs. This at times results in situations like to and fro loop of builds between development and QA. In addition, this also delays actual testing efforts by QA teams and delays in execution of planned test cycles which eventually causes slippage in project timelines set by an associated Project Manager hence shaking the overall complete timeline. To verify the problem different companies were contacted and interviewed locally and internationally. Most of the individuals interviewed from different firms faced similar issues and agreed to a point that some list of cases should be executed before a build could be released to QA teams. In addition, our proposed solution was applied to different projects in different software houses and after applying solution we found that our new testing technique not only contributed towards reduced number of new, obvious and crash bugs but also bugs from previous functionality and number of test cycles were reduced.



F030

A Novel Method for Forest Fire Detection Based on Convolutional Neural Network

Mr. Jialiang Feng, Dingju Zhu, Lihua Liao
South China Normal University, China.

In a forest fire, smoke and fire always appear together. The study of smoke usually uses traditional methods, while deep learning focuses mostly on the features of flame. According to the fact that the smoke is always observed earlier than the flame in the forest fire, this paper presents a deep convolutional neural network model for forest fire detection based on the study of forest fire detecting images. Experimental results show that the deep convolutional neural network for forest fire detection has a higher accuracy than the traditional method in recognition of forest fires by detecting smoke and flame together. In addition, the deep convolutional neural network for forest fire detection combines with preprocessing of ZCA whitening and padding of same size output, which improves the experimental speed and prediction accuracy.



F041

Loose hand gesture recognition based on relational features using a depth sensor

Mr. Chen-Ming Chang, Din-Chang Tseng
National Central University, Taiwan

Hand gesture recognition (HGR) in real-time and with precision has become an important research topic. In this article, a loose hand gesture recognition (LHGR) system based on relational features using a depth sensor is implemented, which not only maintains an impressive accuracy in real-time processing but also enables the user to use loose gestures. HGR can usually be divided into three stages: hand detection, hand feature extraction, and gesture classification. However, the method we propose has been useful in improving all the stages of HGR. In the hand detection stage, we propose a ROI dynamic estimation method and a wrist-cutting method that conform to the characteristics of a human hand. In the feature extraction stage, we use the more reliable relational features which are constructed by local features, global features, and depth coding. In the gesture classification stage, we use three layers of classifiers including finger counting, finger name matching, and coding comparison; these layers are used to classify 16 kinds of hand gestures. In the end, the final output is adjusted by an adaptive decision. The average processing speed per frame is 38.6 ms. Using our method has resulted in an average accuracy of standard gestures of about 98.29%, and an average accuracy of loose gestures of about 88.32%. In summary, our LHGR system can robustly classify hand gestures and still achieve acceptable results for loose gestures.



F044

Game and decision of the developer and the retailer under similar consignment mode

Assoc. Prof. Lei Jiang, Wei Chen, Wu Su
Chengdu Textile College, China

Under the similar consignment background, this paper discusses the problem of how the supply chain made up of a developer and a retailer can make the optimal decision and coordinate the supply chain through bargaining. The retailer decides the proportion of the developer to carry out the product consignment, and the developer makes the product price and the product quality investment. The market demand depends on the product price and quality input of the developer. Different from the uncertain demand of consignment mode, in the situation which the market demand is certain, The game equilibrium solution under decentralized decision and the profit of supply chain under centralized decision are discussed. As a result, there is only a R-Stackelberg equilibrium in the decentralized decision, and the supply chain performance is better than the centralized decision. Finally, through the bargaining question, we get the motivation of the supply chain enterprises to adopt the centralized decision under the certain condition.

F047

A load balancing algorithm with dynamic adjustment of weight

Ms. Rong He, Xinming Tan
Wuhan University of Technology, Wuhan, China

In the distributed service cluster, the load balancing algorithm is an important means to ensure the efficient use of service calls and the rational use of resources. Through analysis of characteristics of distributed service call and defects of existing load balancing algorithms, this paper proposed a new load balancing algorithm which can dynamically adjust weight. The new algorithm combines the server performance and the connection number to express the server real-time load more accurately, uses the dynamic feedback mechanism to adjust the weights, and simplifies the request distribution algorithm, which reduces the response time of service and improves the comprehensive utilization rate of the server.



F049

A Novel Method of Android Malware Detection Based on Ensemble Learning Algorithm

Ms. Jingyi Zhao, Xiuliang Mo, Qiao Zheng
Tianjin University of Technology, China

Android is popular for mobile devices in recent years. As the risk of malware is sharply increasing in Android platform, Android malware detection has become an important research topic. However, the current work shows that the detection of malware still needs to be reformed. Many current results suggest a modification of permissions or a combination of permissions and intents, but Android's fragmentation issues and requiring rooting, hindering the widespread adoption of those methods. Many approaches have been proposed to detect this attack by modifying the Android OS. Existing anti-viruses depend on signature databases that need to be updated from time to time and are unable to detect zero-day malware. The Android Operating system allows inter-application communication through the use of component reuse by using intents. A malware detection model is developed based on ensemble learning algorithms and on the basis of the random forest in WEKA. The method we proposed can take a better efficiency and precision.



V001

Estimation of Point Cloud Object Pose using Particle Swarm Optimization

Assoc. Prof. Ge Yu, Tianyu Liu, Yan Wang, Ming Liu, Lili Guo
Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences, China

In this paper, we deal with the problem of pose estimation based on point cloud. We modify the Iterative closest face (ICF) algorithm by mathematical techniques, in which a new method to calculate point-face distance with less computational cost is proposed. Then, we combine this algorithm with particle swarm optimization to get a better searched result. PSO is employed because there are few parameters to adjust and it is more efficient than the original searched method in ICF. A set of experiments is conducted, following the statistical analysis of the results. These experiments demonstrate the accuracy and robustness of our algorithm.



V020

Three-Dimensional Head Pose Estimation Using a Stereo Camera Arrangement

Mr. Faleh Alqahtani, Jasmine, Vinod Chandran, Jinglan Zhang
Queensland University of Technology, Australia

Head-pose estimation is a crucial component for analysing human behaviour through various 2D and 3D applications. However, the usage of the strategies based on 2D technologies is not very effective, as the sources of data are limited. In contrast, the usage of the strategies based on 3D technologies is a promising area. The 3D HPE methods are also imperfect, especially when they are applied in situations of inconsistent illumination or occlusion. An analysis of related works helps to establish an appropriate framework for the current research, and this paper extends previous work by creating an algorithm that further improves the framework. The method relies upon a stereo camera arrangement and utilises a method to detect and track key landmark points of the human face to evaluate improvement in 3D-head-pose estimation.

V018

Density-based Manifold Collective Clustering for Coherent Motion Detection

Mr. Luyang Wang, Guohui Li, Jun Lei, Tao Wang, Yuqian Zhang
National University of Defense Technology, China

Detecting coherent motion remains a challenging problem with important applications for the video surveillance and understanding of crowds. In this study, we propose the Density-based Manifold Collective Clustering approach to recognize both local and global coherent motion having arbitrary shapes and varying densities. Firstly, a new manifold distance metric is developed to reveal the underlying patterns with topological manifold structure. Based on the novel definition of collective density, the Density-based collective clustering algorithm is further presented to recognize the local consistency, where its strategy is more adaptive to recognize clusters with arbitrary shapes. Finally, considering the complex interaction among subgroups, a hierarchical collectiveness merging algorithm is introduced to fully characterize the global consistency. Experiments on several challenging video datasets demonstrate the

effectiveness of our approach for coherent motion detection, and the comparisons show its superior performance against state-of-the-art competitors.

Listener



L001

Dr. Husain Ibraheem
Kuwait University, Kuwait



L002

Mr. Shaun Cassidy Calagos
De La Salle University, Philippines



L003

Mr. Joshua Macuja
De La Salle University, Philippines

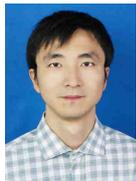
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Mr. Jae Hwan Bong
Korea University, South Korea



L005

Prof. Fei Wang
Xi'an Jiaotong University, China



L006

Dr. Yu Guo
Xi'an Jiaotong University, China



L007

Assoc. Prof. Zhen Liu
Beihang University, China



L008

Prof. Jongtae Rhee
Dongguk university , South Korea

L009

Asst. Prof. Kee-Won Kim
Dankook University



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Ms. Michelle Renee D. Ching
De La Salle University, Manila, Philippines



L011

Mr. Carlos Miguel Dignadice
De La Salle University, Manila, Philippines

L012

Mr. Boakye Frimpong
Shardfo-Tech Company Limited

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One Day Visit--Singapore

Date: April 25, 2018

Place: Singapore

Time: 9:00-17:00

Gathering Place: Bay Hotel Singapore (50 Telok Blangah Road, 098828 Singapore)

Route:

Time	Destination	Play-time
9:00-10:45	Merlion Park	1 Hour
10:45-12:15	Gardens by the Bay	1 Hour
12:15-13:15	Lunch Time	1 Hour
13:15-14:40	Little India	1 Hour
14:40-16:00	China Town	1 Hour
16:00-17:00	Clarke Quay	1 Hour



Attention:

- This visit will charge **100USD** for each.
- or you could choose to enjoy free time on April 25 to explore Singapore city by yourself;
- Please be there on time, or you will miss the visit.
- The fees including: Traveling route, English guide Lunch and traveling bus service
- The itinerary / duration to visit may change without advance notice depending on group size or unexpected local situation.
- The participants should go to the assembly point by themselves, no pick-up service.
- Should you have any more doubt, please contact us via: icmva@sciei.org and icfcc@sciei.org

Service excludes:

- Personal expenses (not mentioned above).

Scenic Introduction:

No.1 Merlion Park



The body symbolises Singapore's humble beginnings as a fishing village when it was called Temasek, meaning 'sea town' in Old Javanese. Its head represents Singapore's original name, Singapura, or 'lion city' in Malay. Today, you can glimpse this legend at Merlion Park. Spouting water from its mouth, the Merlion statue stands tall at 8.6 metres and weighs 70 tonnes. This icon is a 'must-see' for tourists visiting Singapore, similar to other significant landmarks around the world. Built by local craftsman Lim Nang Seng, it was unveiled on 15 September 1972 by then Prime Minister Lee Kuan Yew at the mouth of the Singapore River, to welcome all visitors to Singapore.

No.2 Gardens by the Bay



Located next to Marina Reservoir, Gardens by the Bay offers breath-taking waterfront views. This multi-award winning horticultural destination spans 101 hectares of reclaimed land, and is made up of two main areas - Bay South Garden and Bay East Garden. At the Cloud Forest, a 35-metre tall mountain is veiled in mist and covered in lush vegetation amidst the world's tallest indoor waterfall. Bay South Garden is the largest of the gardens. Inspired by an orchid, the design resembles Singapore's national flower, Vanda 'Miss Joaquim'. You can't miss the massive Supertrees here. These tree-shaped vertical gardens are between nine to 16 storeys tall. Walk on the suspended walkway between two Supertrees to enjoy a bird's eye view of the gardens. In the evening, catch the sky show of choreographed lights and sounds at the Garden Rhapsody amidst the Supertrees. Head to Bay East Garden for the perfect picnic setting with lush lawns and tropical palm trees. From the waterfront promenade, you will see a picturesque view of the city skyline.

No.3 Little India



Little India today is one of Singapore's most vibrant districts. As you walk down Serangoon Road and neighbouring streets, explore their mix of Hindu and Chinese temples, mosques and churches. Fill your tummy with South Indian vegetarian food, North Indian tandoori dishes and local fare like roti prata (round pancakes) and teh tarik (pulled tea in Malay). Try to spot the brewers 'pull' the hot milk tea – it's amazing showmanship. Don't forget to shop. The 24-hour shopping mall Mustafa Centre offers everything from electronics to groceries, or take your pick from open-air Tekka Centre, goldsmith shops and sari stores. With its close proximity to the city and a bohemian vibe, many artists also call Little India home. Do visit during Deepavali (usually October or November) and Pongal (mid-January) – the joyous celebrations are wonderful to observe.

No.4 Chinatown



The cramped five-foot-ways, dingy alleys and raucous street hawkers are relics of Chinatown's past. Yet pockets of history remain in Chinatown, along with more modern sights. You could easily spend a few days wandering through these still-narrow streets. Family-run goldsmiths, medicinal halls and teahouses ply their trades next to sleeker neighbours such as hipster bars and lifestyle shops. If you're a foodie, try 'char kway teow' (stir-fried noodles) and 'satay' (barbecued meat skewers) at Chinatown Food Street, a row of hawker stalls, shophouse restaurants and kiosks along Smith Street. For trendier tastes, chic restaurants and bars are in Neil Road, Duxton Road and Keong Saik Road. The vibe is electric in Club Street and Ann Siang Road on Friday and Saturday nights, when locals and expats head down for dinner and drinks

No.5 Clarke Quay



Clarke Quay is a historical riverside quay in Singapore, located within the Singapore River Planning Area. The quay is situated upstream from the mouth of the Singapore River and Boat Quay. At present, five blocks of restored warehouses house various restaurants and nightclubs. There are also moored Chinese junks (tongkangs) that have been refurbished into floating pubs and restaurants. The Cannery is one of the anchor tenants of the place. There are over 5 different concepts in one block. Another anchor tenant, The Arena, will be home to Singapore's First Permanent Illusion Show (starting August 2008) starring J C Sum and 'Magic Babe' Ning. The G-MAX reverse bungee, the first in Singapore, is located at the entrance which opened in November 2003. Notable restaurants and nightclubs include Hooters and Indochine. River cruises and river taxis on the Singapore River can be accessed from Clarke Quay. One of its most popular attractions is its exciting host of CQ's signature events happening once every quarter. Clarke Quay has become known as a hub of Singaporean nightclubs including Zirca, and up until 2008, the Ministry of Sound.

