

April 9-12, 2019

Cairo, Egypt

Address: The British University in Egypt

El Sherouk City, Suez Desert Road, Cairo 11837 - P.O. Box 43, Egypt

2019 8th International Conference on Software and Information Engineering (ICSIE 2019)

2019 2nd International Conference on Network Technology (ICNT 2019)

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Welcome Message

Dear Participants,

Welcome to 2019 Cairo Conferences! The conferences aim to bring together international academicians, scientists and industrialists for knowledge sharing, ideas exchanging and outcomes collaborating and presenting in software, information engineering and network technology.

2019 8th International Conference on Software and Information Engineering (ICSIE 2019) is initiated in 2012. It has been held in Phuket (Thailand), Chennai (India), Singapore, Dubai (UAE), Tokyo (Japan), Singapore, and Cairo (Egypt). 2019 2nd International Conference on Network Technology (ICNT 2019) is initiated in 2018, the first session was held at The British University in Egypt. ICSIE 2019 and ICNT 2019 will be held in Cairo, Egypt on April 9-12, 2019 once again, co-organized by The British University in Egypt.

The Technical Program Committee has assembled an excellent program comprising of 7 excellent Keynote and Plenary Speeches from renowned scientists from the world, 8 parallel technical sessions comprising of more than 50 presentations after a long period of review process.

On behalf of the Organizing Committee, we wish to thank the keynote speakers, invited speakers and authors of selected papers for their outstanding contributions. we would also like to thank members of the organizing committee, anonymous reviewers and volunteers for their great efforts. Without their contribution, dedication and commitment, we would not have achieved so much.

We sincerely hope that you will find the ICSIE 2019 & ICNT 2019 beneficial and fruitful for your professional development. We also hope that you will enjoy our hospitality and will have an enjoyable and memorable time in Cairo.

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Prof. Souvik Pal, Elite College of Engineering, India

Dr. Amar Faiz Zainal Abidin, Universiti Teknikal Malaysia Melaka, Malaysia

Dr. Yeh-Cheng Chen, University of California, USA

Dr. Hosam El-Sofany, King Khalid University, KSA

Instructions

Registration Guide:

Arrive at the Conference Venue→Inform the conference staff of your paper ID→Sign your name on the Participants List→Check your conference materials.

Checklist:

1 receipt, 1 name card, 1 printed conference program, 2 lunch coupon, 1 dinner coupon, 1 computer bag, 1 USB stick (paper collection).

Devices Provided by the Conference Organizers:

Laptops (with MS-Office & Adobe Reader)

Projectors & Screen

Laser Sticks

Materials Provided by the Presenters:

PowerPoint or PDF files

Duration of Each Presentation:

Regular Oral Session: 15 Minutes of Presentation including 2-3 Minutes of Q&A

Notice:

*Certificate of Listener can be collected in the registration counter.

*Certificate of Presentation can be collected from the session chair after each session.

*The organizer will not provide accommodation, so we suggest you make an early reservation.

*One best presentation will be selected from each session. The best one will be announced when each session ends and will be awarded by the session chair after each session in the meeting room.

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Agenda Overview

※Note:

Building C: 1. Auditorium; 2. Boutros Ghali Hall; 3. Ibrahim Badran Hall; 4. Seminar Room
All rooms are in the main building (Building C) in front of the main gate.

Tuesday April 9th, 2019

- 10:00-15:30 **Participants check-in & Materials Collection—Lobby of Building C**
11:30-12:30 **1st BUE Tour (Optional)**
14:00-15:00 **2nd BUE Tour (Optional)**

Wednesday April 10th, 2019

Venue: Auditorium

- 09:00-09:30 **Participants check-in & Materials Collection—Lobby of Building C**
- 09:30-10:20 **Opening Ceremony**
Professor Samir A. El-Seoud, Conference Chair
Professor Omar Karam, Dean of Informatics and Computer Science, BUE
Professor Yehia Bahei ElDin, Vice President of The British University of Egypt
Professor Ahmed Hamad, President of The British University in Egypt
H. E. Mr. Farid Khamis, BUE Chairman of the Board of Trustees
- 10:20-11:00 **Speaker I**
Prof. Abdel Salam Heddaya, Partner Architect, Big Data Infrastructure at Microsoft, USA
Speech Title: Hyper-concentration of Data and Computation in the Cloud: Technical, Economic and Social Aspects
- 11:00-11:30 **Coffee Break & Group Photo**
- 11:30-12:10 **Speaker II**
Prof. WANG Jun, City University of Hong Kong, Hong Kong
Speech Title: Collaborative Neurodynamic Optimization Approaches to Distributed, Global and Multiple-objective Optimization

12:10-12:50 **Speaker III**
Prof. Magne Jørgensen, Simula Research Laboratory, Norway
Speech Title: What can - and should - Software Engineering Learn from Psychology?

12:50-14:00 **Break & Lunch at restaurant**

Parallel Presentation Sessions

Venue: Boutros Ghali Hall / Ibrahim Badran Hall / Seminar Room

14:00-16:00 **Oral Session 1: Data Mining and Big Data Analysis**
[Boutros Ghali Hall]
Presentation: IE063 IE043 IE040 IE083 IE080 IE077 IE010 IE037

14:00-16:00 **Oral Session 2: Software Engineering and Information Technology**
[Ibrahim Badran Hall]
Presentation: IE071 IE070 IE009 IE041 IE002 IE034 IE012 IE073

14:00-16:00 **Oral Session 3: Computer Vision and Deep Learning**
[Seminar Room]
Presentation: IE051 IE0002 IE022 IE030 IE038-A IE075 IE062 IE072

18:30-21:00 **Dinner on Nile Boat**
*Gathering at Auditorium Entrance (building C) in the front of the BUE main entrance gate at **18:30**. There will be buses from BUE to the dinner venue.*

Thursday April 11th, 2019

Venue: Auditorium

09:00-09:40 **Speaker IV**
Prof. Tasos Dagiuklas, Head of Computer Science and Informatics, London South Bank University, UK
Speech Title: Technology Enablers for 5G Networks

09:40-10:20 **Speaker V**
Prof. Andreas Pester, Carinthia University of Applied Sciences (CUAS), Austria
Speech Title: Distributed Experiment Systems and Distributed Learning

10:20-10:40 Coffee Break

10:40-11:20 Speaker VI

Dr. David Daqing Chen, Senior Lecturer of Engineering/Computer Science and Informatics, London South Bank University, UK

Speech Title: Deep Learning and Lip Reading Systems Development

11:20-12:00 Speaker VII

Prof. Naoko Fukami, Director of Research Station, Cairo, Japan Society for the Promotion of Science Promotion Society (JSPS)

Speech Title: JSPS Program and Islamic Geometry of Muqarnas through the History of Islamic Architecture

12:00-13:00 Lunch at restaurant

Parallel Presentation Sessions

Venue: Boutros Ghali Hall / Ibrahim Badran Hall / Seminar Room

**13:00-14:30 Oral Session 4: Wireless Communication and Information System
[Boutros Ghali Hall]**

Presentation: IE0012 IE085 IE003 IE016 IE0006 IE074

**13:00-14:30 Oral Session 5: Network and Internet of Things Technology
[Ibrahim Badran Hall]**

Presentation: IE0004 IE1001 IE0007 IE047 IE0011 IE052

**13:00-14:30 Oral Session 6: Knowledge Engineering and Knowledge Management
[Seminar Room]**

Presentation: IE025 IE036 IE053 IE044 IE059 IE061

14:30-15:00 Coffee break

**15:00-16:00 Oral Session 7: Software and Knowledge Engineering
[Boutros Ghali Hall]**

Presentation: IE039 IE079 IE031 IE076

**15:00-16:00 Oral Session 8: Computer Vision, Deep Learning and Data Mining
[Ibrahim Badran Hall]**

Presentation: IE078 IE055 IE068 IE088

16:00-16:30 **Closing Session**
[Auditorium]

Friday April 12th, 2019

09:00-17:00 **One-Day Tour in Cairo**
Onsite registration cannot be accepted.

Conference Venue

The British University in Egypt

Address: El Sherouk City, Suez Desert Road, Cairo 11837 - P.O. Box 43



- **Renaissance Cairo Mirage City hotel**

Add: Ring Road, Mirage City, P.O. Box 250, Heliopolis, Cairo 11757 Egypt

To BUE - The British University in Egypt--26.5 km--25munites by Taxi

- **Tolip Family Park Hotel**

Add: KM 26 Cairo / Suez Road, North of Family Park, Al Rehab City, 2nd Entrance, New Cairo, 11841 Cairo, Egypt

To BUE - The British University in Egypt—18.2 km—19munites by Taxi

- **The Westin Cairo Golf Resort & Spa, Katameya Dunes**

Add: Road 90, New Cairo City, Katameya Dunes, New Cairo, 11835 Cairo, Egypt

To BUE - The British University in Egypt—27.2 km--32munites by Taxi

- **Sunny Studio in New Cairo**

Add: Villa 8, block 9021, district 9, First Settlement Villa 8, 3rd floor, New Cairo, 11865 Cairo, Egypt

To BUE - The British University in Egypt—27.7 km--29munites by Taxi

Introduction of Speakers



Speaker I

Prof. Abdel Salam Heddaya, Partner Architect, Big Data Infrastructure at Microsoft, USA

Speech Title: Hyper-concentration of Data and Computation in the Cloud:
Technical, Economic and Social Aspects

Abstract: Hyper-scale cloud services present a puzzle and a challenge. What exactly happened to enable this unprecedented concentration of capital-intensive computing hardware, which flies in the face of decades-long trends towards decentralization? I will describe the phenomenon briefly, and share some personal observations of both the landmark technical results and limitations, as well as the economic forces, that combined to produce it. More importantly, what are the impacts, risks and opportunities of this concentration? I will survey as many issues as I can, such as inversions in business costs (from human talent to infrastructure), in network effects (from distributed to concentrated data), and in the balance of power (from individual consumers and developers, to corporations).

Biography: Prof. Solom Heddaya has been a professor, entrepreneur, engineering manager and architect of computer systems. As a professor of Computer Science for nearly a decade at Boston University, he worked on log-structured replicated file systems, on distributed shared memory for parallel computing, and on Internet-scale caching. The latter project spun-off InfoLibria, Inc., of which he was co-founder and Chief Technology Officer. InfoLibria was the premier developer of distributed system appliances, that backbone ISPs deployed to deliver “rich web apps” with high quality and low cost, from the Internet’s edge. Solom joined Microsoft at Partner level fifteen years ago. He spent half that time improving all aspects of Windows reliability, by enhancing failure measurement, detection, diagnosis, tolerance, recovery and repair. In the second half, he alternately managed, or was architect for, Cosmos, an internal big data system that combines hundreds of thousands of servers to store many exabytes of data, and to power the analytics that underly all of Microsoft’s largest online services (Azure, Bing, Office, Skype, Windows, Xbox, etc.).

Solom’s academic work was funded by NSF grants, and his entrepreneurial work by significant venture capital from the likes of Microsoft and Nortel. The results were recognized by numerous industry and internal Microsoft awards. Solom is a co-inventor of over a dozen patents in various areas of computer systems. Recent publications he co-authored include Hydra in USENIX NSDI 2019.

Solom holds a B.Sc. (First Class Honors) in Computer Engineering & Automatic Control from Alexandria University and a Ph.D. In Computer Science from Harvard University.




Speaker II

Prof. WANG Jun, City University of Hong Kong, Hong Kong

Speech Title: Collaborative Neurodynamic Optimization Approaches to Distributed, Global and Multiple-objective Optimization

Abstract: The past three decades witnessed the birth and growth of neurodynamic optimization which has emerged and matured as a powerful approach to real-time optimization due to its inherent nature of parallel and distributed information processing and the hardware realizability. Despite the success, almost all existing neurodynamic approaches work well only for convex and generalized-convex optimization problems with unimodal objective functions. Effective neurodynamic approach to constrained global optimization with multimodal objective functions is rarely available. In this talk, starting with the idea and motivation of neurodynamic optimization, I will review the historic review and present the state of the art of neurodynamic optimization with many individual models for convex and generalized convex optimization. In addition, I will present a multiple-timescale neurodynamic approach to selected constrained optimization. Finally, I will introduce population-based collaborative neurodynamic approaches to constrained distributed and global optimization. By deploying a population of individual neurodynamic models with diversified initial states at a lower level coordinated by using some global search and information exchange rules (such as PSO) at an upper level, it will be shown that global and multi-objective optimization problems can be solved effectively and efficiently.

Biography: Jun Wang is a Chair Professor of Computational Intelligence in the Department of Computer Science at City University of Hong Kong. Prior to this position, he held various academic positions at Dalian University of Technology, Case Western Reserve University, University of North Dakota, and Chinese University of Hong Kong. He also held various part-time visiting positions at US Air Force Armstrong Laboratory, RIKEN Brain Science Institute, Huazhong University of Science and Technology, Dalian University of Technology, and Shanghai Jiao Tong University as a Changjiang Chair Professor. He received a B.S. degree in electrical engineering and an M.S. degree in systems engineering from Dalian University of Technology, Dalian, China. He received his Ph.D. degree in systems engineering from Case Western Reserve University, Cleveland, Ohio, USA. His current research interests include neural networks and their applications. He published about 200 journal papers, 15 book chapters, 11 edited books, and numerous conference papers in these areas. He is the Editor-in-Chief of the IEEE Transactions on Cybernetics. He also served as an Associate Editor of the



IEEE Transactions on Neural Networks (1999-2009), IEEE Transactions on Cybernetics and its predecessor (2003-2013), and IEEE Transactions on Systems, Man, and Cybernetics – Part C (2002–2005), as a member of the editorial advisory board of International Journal of Neural Systems (2006–2013), and a member of the editorial board of Neural Networks (2012-2014) as a guest editor of special issues of European Journal of Operational Research (1996), International Journal of Neural Systems (2007), Neurocomputing (2008, 2014, 2016), and International Journal of Fuzzy Systems (2010, 2011). He was an organizer of several international conferences such as the General Chair of the 13th International Conference on Neural Information Processing (2006) and the 2008 IEEE World Congress on Computational Intelligence, and a Program Chair of the IEEE International Conference on Systems, Man, and Cybernetics (2012). He has been an IEEE Computational Intelligence Society Distinguished Lecturer (2010-2012, 2014-2016). In addition, he served as President of Asia Pacific Neural Network Assembly (APNNA) in 2006 and many organizations such as IEEE Fellow Committee (2011-2012); IEEE Computational Intelligence Society Awards Committee (2008, 2012, 2014), IEEE Systems, Man, and Cybernetics Society Board of Directors (2013-2015), He is an IEEE Fellow, IAPR Fellow, and a recipient of an IEEE Transactions on Neural Networks Outstanding Paper Award and APNNA Outstanding Achievement Award in 2011, Natural Science Awards from Shanghai Municipal Government (2009) and Ministry of Education of China (2011), and Neural Networks Pioneer Award from IEEE Computational Intelligence Society (2014), among others.



Speaker III

Prof. Magne Jørgensen, Simula Research Laboratory, Norway

Speech Title: What can - and should - Software Engineering Learn from Psychology?

Abstract: Software development is about people solving problems. They do this alone or in groups, for themselves or for others, with knowledge, experiences and biases. People solving problems have been studied for more than two hundred years in psychology, affecting not only treatment processes, but also economics, management, marketing, teaching and numerous other disciplines. What can we learn from how psychology researchers do their empirical studies and how they succeed in achieving useful results and affect practice? In this talk I will examine similarities and differences in use of empirical methods in psychology and software engineering and summarize this in what I argue has the potential of improving the quality and impact of our empirical software engineering studies.

Biography: Magne Jørgensen received the Diplom Ingeieur degree in Wirtschaftswissenschaften from the University of Karlsruhe, Germany, in 1988 and the Dr. Scient. degree in informatics from the University of Oslo, Norway, in 1994. He is a professor of software engineering at the University of Oslo and a member of the software engineering research group at the Simula Research Laboratory. He has 10 years industry experience as a consultant and manager. His research interests include software estimation, uncertainty assessments in software projects, expert judgment processes, and learning from experience.

Magne Jørgensen works as a researcher at Simula Research Laboratory and a professor at the University of Oslo. Previously, he worked with software development, estimation, and process improvement in the telecom and insurance industry. He is one of the founders of evidence-based software engineering and teaches this to students and software professionals.

His current main research interest is effort estimation, bidding processes, outsourcing, and software development skill assessments.



Speaker IV

**Prof. Tasos Dagiuklas, Head of Computer Science and Informatics,
London South Bank University, UK**


Speech Title: Technology Enablers for 5G Networks

Abstract: 5G is viewed as a set of key enabling technologies allowing the realisation of a "hyperconnected society" where billions of users, via end devices (e.g. smart home appliances, connected cars, smart phones, laptops) and machines, will be able to exchange data and offer/receive services at a high QoS level. Current network facing several challenges: High CAPEX and OPEX, spectral efficiency, bandwidth crunch and poor QoE. To overcome these challenges, telecommunication providers have to invest into new deployments which will raise their capital and operational costs. 5G can be considered a set of enabling technologies to support enhanced mobile broadband, massive machine type of communications and ultra reliable and low latency communications. The talk will cover the fundamental technology enablers in 5G era: Telco and Network Cloudification, Virtualization Technologies, Microservice architectures, Edge Cloud Computing technologies (fog, MEC, mist etc), Software Defined Everything, Network Function Virtualization (NFV) and Network Slicing.

Biography: Prof. Tasos Dagiuklas is a leading researcher and expert in the fields of Internet and multimedia technologies for smart cities, ambient assisted living, healthcare, and smart agriculture. He is the leader of the newly established SuITE (Smart Internet Technologies) research group at LSBU, where he also acts as the Head of Division in Computer Science.

Tasos received his Engineering Degree from the University of Patras, Greece, in 1989. He completed an MSc at the University of Manchester in 1991 and a PhD at the University of Essex-UK in 1995, all in Electrical Engineering. He has been a principal investigator, co-investigator, project and technical manager, coordinator and focal person of more than 20 internationally research and development and capacity training projects. with total funding of approximately £5m from different international organisations.

His research interests include open-based networking (software-defined network, network function virtualisation), FTV, 3DV, media optimisation across heterogeneous networks, quality of experience, virtual reality/augmented reality technologies and Cloud infrastructures and services. He has published more than 150 papers in these fields. His research has received more than 1150 citations by researchers (Google Scholar).



He has served as Vice-Chair for the Institute of Electrical and Electronics Engineers (IEEE) Multimedia Communications Technical Committee (MMTC) Quality of Experience Working Group, and as Key Member for IEEE MMTC MSIG and 3DRPC WGs.



Speaker V

Prof. Andreas Pester, Carinthia University of Applied Sciences (CUAS), Austria

Speech Title: Distributed Experiment Systems and Distributed Learning

Abstract: The lecture will cover new directions in online and pocket laboratories and related learning scenarios such as flipped classroom, vocational studies, etc. Special attention will be given to the new laboratory network VISIR Association in the IAOE. Another focus is the application of data science methods and dashboards to support teachers in laboratory exercises with the VISIR system. Distributed systems for online labs are also used for distributed mini-systems for data acquisition and analysis. Modern trends in distributed data analysis with deep learning are presented.

Biography: Professor Dr. Andreas Pester holds a diploma in Mathematics of Odessa State University and has got his PhD from Kiev State University. He habilitated at the University of Technology Dresden. Currently he holds a position as senior researcher at Carinthia University of Applied Sciences, Villach and leads the research group "Online and pocket labs". He has more than 20 years' experience in eLearning and online laboratories. In the last 5 years his research interests switched to deep learning, implemented in online distributed computing systems.

He has more than 20 years' experience in teaching math and mathematical modelling, simulation technologies, remote engineering, online lab, machine learning and more than 16 years' experience in project-based learning with undergraduate and graduate students.

More than 15 years he was included and leading development, implementation and evaluation of curricula in higher education on undergraduate and graduate level (including international master programs) A. Pester was invited as a Guest Professor at the UPC Barcelona, Technical University of Kharkov and Kiev, University Maribor, UNESP Bauru (Brazil), University of Applied Sciences Vienna, Armenian-American University Yerevan, PUC Rio de Janeiro. He was involved in more than 12 EU- and national projects in eLearning and remote experimentation (as project leader or as researcher).



Speaker VI

Dr. David Daqing Chen, Senior Lecturer of Engineering/Computer Science and Informatics, London South Bank University, UK

Speech Title: Deep Learning and Lip Reading Systems Development

Abstract: attraction globally. Aiming to prompt academic collaborations amongst universities and industries, this talk is mainly served as an introduction to the various on-going research projects on deep learning of our research group based on London South Bank University, including


- Feature extraction and labelling large data sets,
- Speaker-independent lip reading,
- Dimensionality reduction techniques, and
- Optimal CNN topology design.

Real-world case studies and the relevant systems demos will be provided.

Speaker-independent lip reading: This project is about the use of deep learning to automate the visual speech recognition or lip reading of a person speaking using purely visual lip movements without any audio input. There are many obstacles to lip reading which. These include the speaker dependency of neural network based lip reading where the performance of a lip reading system is dependent on the speaker whom it was tested on and would vary when implemented on different speakers; that lack of available training data that covers a wide variety of vocabulary and contexts required to train lip reading systems that are suitable for natural spoken language and the inability of existing models to distinguish between homophone words or words that produce identical lip movements when uttered.

A neural network model is proposed for the specific classification of phonemes and visemes which are the most fundamental units of speech with the model itself being a stacked configuration of convolutional neural networks and recurrent neural networks. A phoneme corresponds to a spoken character or sound such that each one has an associated acoustical signal, whereas a viseme is a distinct lip movement or visual units of sound that is produced for every spoken character of which there are around a dozen.

Work that has been carried out to addresses such challenges which include the use of contour mapping, which is an edge detection pre-processing procedure for extracting an outline of someone's lips to use as the feature input; a three-dimensional convolutional neural network for classifying visemes; and a stacked recurrent neural network with word vectors and embeddings for



deciphering homophone words as well as review of which feature representations are the most ideal for deep learning based lip reading.

Dimensionality reduction techniques: A supervised version of t-SNE algorithm has been proposed which can be applied in any high dimensional datasets for visualisation and/or as a feature extraction for classification problems in a (much) lower dimensional space. The super performance of this new algorithm can be demonstrated by applying it to three different high dimensional datasets: MNIST, Chest x-ray, and SEER Breast Cancer. The embedded data generated by the algorithm in a 2-dimensional space has shown a better visualization and a significant improvement in terms of classification accuracy in comparison to the original t-SNE.

Optimal CNN topology design: Existing Convolutional Neural Network (CNN) models come with different number of layers. This made the CNN application less portable to different fields and data sizes. An ongoing study in LSBU is focussing to address this issue. The study aims to investigate how much each layer can contribute to the overall feature learning by using different data separability measures in order to quantify the layers learning capacity.

Biography: Dr Daqing Chen's main professional expertise and research interests are in the areas of business intelligence, data mining, intelligent information processing, and SAS system.

Dr Chen joined the University in July 1999. Prior to this, Daqing worked as a Research Fellow in the System, Electronics and Information Laboratory, IRESTE, University of Nantes, Nantes, France (June 1998 - July 1999), a Research Associate in the Department of Computer Science and Engineering, The Chinese University of Hong Kong (December 1997 – June 1998), and as a Post-doctoral Researcher and then an Associate Professor at the National Key Laboratory of Radar Signal Processing, Xidian University, Xian, China (February 1994 – November 1997).

Dr Chen is currently the Pathway Leader for BSc and HND Business Intelligence. He is also the leader of the Public Analytics research group.



Speaker VII

Prof. Naoko Fukami, Director of Research Station, Cairo, Japan Society for the Promotion of Science Promotion Society (JSPS)

Speech Title: JSPS Program and Islamic Geometry of Muqarnas through the History of Islamic Architecture

Abstract: First, Introduction of the JSPS Program: JSPS or Gakushin for short, is an independent administrative institution, established by way of a national law for the purpose of contributing to the advancement of science in all fields of the natural and social sciences and the humanities. Focus will be on the international programs such as: 1) supporting international joint research and seminars, 2) providing platforms for international training opportunities for young researchers, 3) inviting researchers to Japan, 4) sending young Japanese researchers overseas, 5) support globalization of universities.

Next, Islamic geometry: Muqarnas, as stalactite or honeycomb vault came out of and developed through Islamic Architect based on detailed geometry. The geometrical feature is divided into three types, rectangular coordinates, polar coordinates and combined both. At last it will make clear Egyptian locality about muqarnas from Fatimid to Ottoman period.

Biography: Naoko Fukami is a Director of Research Station, Cairo, Japan Society for the Promotion of Science Promotion Society (JSPS) since 2015. She makes a project of Revitalization and Sustainability of Communities in Historic Cairo, supported by TOYOTA Fund from 2016 to 2018. She obtained her M.Sc from Tokyo Metropolitan University in 1981 about Islamic Architecture in Daccan from the 14th to 17th century, and Ph.D from Yokohama National University in 1998 about Muqarnas, its origin and development. She was a Visiting Professor Institute of Oriental Culture from 1999 to 2001, University of Tokyo, making the Digital Archive: by the Mission for Indian History and Archaeology, University of Tokyo in 1959-1962. She was a Professor, Organization for Islamic Area Studies, Waseda University from 2012 to 2014, she joined the project of Islam and Multiculturalism. Her books are NHK Project of Asian Historical Cities, Recollected Isfahan, "Isfahan-The Dream of Oasis", pp169-199, NHK Publication, 2002, "The World of Islamic Architecture", Kodansha Genndai-Shinsho, 2005 "World history in Islamic Architecture", Iwanami Shoten, 2013, etc.

Parallel Presentation Sessions

Wednesday April 10th, 2019

✧ Tips:

Please arrive at conference room 15 minutes earlier, in case some authors are not able to make the presentation on time. There will be a session group photo part at the end of each session. The best presentation will be chosen after each session and the certificate will be awarded by the chair. Good Luck!

Oral Session 1: Data Mining and Big Data Analysis

Session Chair: Prof. Amal Elnahas, The British University in Egypt, Egypt

Time: 14:00-16:00

Venue: Boutros Ghali Hall

IE063 14:00-14:15	<p>Novel Biomarkers from Genes in the Apoptotic Pathway for Prediction of HCC Progression using Association Rule Mining</p> <p>Tasneem A. Gameel, Sherine Rady, Khaled A. ElBahnasy and Sanaa M. Kamal Ain Shams University, Egypt</p> <p>Abstract-Liver cancer, a main cause of death, is extremely difficult to be diagnosed at its early stages. On a positive side, predicting the disease development or progression by analyzing medical data can be helpful for the future early diagnosis and accordingly the increase of the patients' survival. Medical investigation and researchers raise that Single nucleotide polymorphisms in certain apoptosis-related genes are related to the cancer development. The objective of this paper is to find quantitative associations between apoptotic gene-related polymorphisms and the progression level of the liver cancer. To find these associations, Association rule mining is applied using the Frequent Pattern algorithm. An experimental study on an Egyptian cohort of 1246 patients with advanced cirrhosis and liver cancer resulted in associations which can serve as novel biomarkers. It has been found that CDKN2A and HLA-DP genes have relation to the HCC development with a confidence value 0.55, and CDKN1B and I128b, are related to the liver cancer progression with a confidence value 0.54.</p>
IE043 14:15-14:30	<p>A New Supervised t-SNE with Dissimilarity Measure for Effective Data Visualization and Classification</p> <p>Laureta Hajderanj, Isakh Weheliye Daqing Chen London South Bank University, UK</p> <p>Abstract-Musculoskeletal disorders (MSD) are one of the leading health concerns.</p>

	<p>Automatic recognition systems for MSD detection and diagnosis from radio-graphs would be highly beneficial for supporting radiologists' task. A new automatic recognition system is introduced and specialized in diagnosing different Elbow-disorders. It is a cloud-based application attached to a labelled cloud database. Labelling dataset is achieved by expert radiologist. A comparative study is provided to record the effect of different features and classifiers on the system accuracy.</p>
<p>IE040 14:30-14:45</p>	<p>Personality Traits for Egyptian Twitter Users Dataset Marwa S.Salem, Sally S.Ismail, Mostafa Aref Ain Shams University, Egypt</p> <p>Abstract-Early detection of lung nodule decreases the risk of advanced stages in lung cancer disease. Random forest (RF), a machine learning classifier, is used to detect the lung nodules and classify soft-tissues into nodules and non-nodules. A lung nodule classification approach is proposed to improve early detection for nodules. A five stages model has been built and tested using 165 cases from the LIDC database. Stage 1 is image acquisition and preprocessing. Stage 2 is extracting 119 features from the CT image. Stage 3 is refining feature vectors by removing all duplicate instances and undersampling the non-nodule class. Stage 4 is tuning the RF parameters. Stage 5 is examining different collections from the extracted feature sets to select those scores best for classification. The accuracy achieved by RF is the highest compared to other machine learning classifiers such as KNN, SVM, and DT. The proposed method aimed to analyze and select features that maximize classification results. Pixel based feature set and wavelet-based set scored best for higher accuracy. RF was tuned with 170 trees and 0.007 for in-bag fraction. Best results were achieved by the proposed model are 90.67%, 90.8% and 90.73% for sensitivity, specificity, and accuracy respectively.</p>
<p>IE083 14:45-15:00</p>	<p>A Novel Method of Dynamic Cloud Workflow Processing Based on 3D_DWFN Nannan Heng, Zhengyi Yang, Shengnan Zhu and Jie Zeng Chongqing University, China</p> <p>Abstract-Cloud workflow is the combination of workflow management system and cloud platform. Compared with general workflow system, it can provide optimization of resource management and automatic scheduling of task. However, cloud workflow technology still lacks flexibility and cannot response to the changing business requirements in real time. In order to cope with the changing of business requirements, a dynamic workflow change model 3D-DWFN is proposed. The model is verified to be correct and the migration strategy is set up, thus the dynamic change algorithm is realized. It is applied to a business management system; the experiment shows that it is more effective than general workflow</p>

	model.
IE080 15:00-15:15	<p>Semantic Representation Extraction from Unstructured Arabic Text Gehad Zakria, Mamdouh Farouk, Khaled Fathy and Malak Makar Assiut University, Egypt</p> <p>Abstract-One of the crucial tasks in the Semantic Web research is extracting information from unstructured text and converting it into semantic form to be machine understandable. This semantic representation is useful for many purposes such as question answering, summarization and information retrieval. This paper provides a system for converting Arabic text into Resource Description Framework (RDF) semantic format. The proposed system includes syntactical parser that used to extract triples (subject-predicate-object) from preprocessed Arabic text. Moreover, name entity recognition is used to extract entities which mapped with DBpedia to get URIs. Finally, the corresponding RDF representation which captures semantics of Arabic text is generated.</p>
IE077 15:15-15:30	<p>Feature Extraction and Analysis for Lung Nodule Classification using Random Forest Nada S. El-Askary, Mohammed A.-M. Salem and Mohamed I. Roushdy Ain Shams University, Egypt</p> <p>Abstract-Early detection of lung nodule decreases the risk of advanced stages in lung cancer disease. Random forest (RF), a machine learning classifier, is used to detect the lung nodules and classify soft-tissues into nodules and non-nodules. A lung nodule classification approach is proposed to improve early detection for nodules. A five stages model has been built and tested using 165 cases from the LIDC database. Stage 1 is image acquisition and preprocessing. Stage 2 is extracting 119 features from the CT image. Stage 3 is refining feature vectors by removing all duplicate instances and undersampling the non-nodule class. Stage 4 is tuning the RF parameters. Stage 5 is examining different collections from the extracted feature sets to select those scores best for classification. The accuracy achieved by RF is the highest compared to other machine learning classifiers such as KNN, SVM, and DT. The proposed method aimed to analyze and select features that maximize classification results. Pixel based feature set and wavelet-based set scored best for higher accuracy. RF was tuned with 170 trees and 0.007 for in-bag fraction. Best results were achieved by the proposed model are 90.67%, 90.8% and 90.73% for sensitivity, specificity, and accuracy respectively.</p>
IE010 15:30-15:45	<p>To Apply Data Mining for Classification of Crowd Sourced Software Requirements Soonh Taj, Dr Qasim Ali Arain, Imran Memon and Asma Zubedi Bahria university, Karachi campus, Pakistan</p>

Abstract-Now a day's main focus of developers is to build quality software that works according to customer needs and for this reason it is necessary to gather right requirements as requirement elicitation is the critical step that impacts on the success of software project as misinterpreted requirements leads to the failure of software project. By keeping this in mind a research is carried out on improving requirements elicitation process and automating the process of classifying requirements. In this research, a model is proposed which will help in this scenario for requirements elicitation and requirement classification. This paper presents a model in which crowd sourcing approach is used so that customers, end users, stakeholders, developers and software engineers can make active participation for requirement elicitation process and requirements gathered using crowdsourcing approach are used by model for classification process i.e. classification of requirements into functional and non-functional requirements. For the proof of proposed model a case study is conducted. Results of case study provided the usefulness and efficiency of proposed model for classification of crowd sourced software requirements.

IE037
15:45-16:00

The Application of Data Mining Techniques and Feature Selection Methods in the Risk Classification of Egyptian Liver Cancer Patients Using Clinical and Genetic Data.
Esraa Hamdi Abbas, Prof. Sanaa Kamal, Prof. Khaled Elbahnasy, Dr Rasha Ismail
Ain Shams University, Egypt

Abstract-Data mining techniques has shown great potential in biomedical and health care fields. The objective of this paper is to apply feature selection methods and data mining techniques to Egyptian liver cancer patients' data to predict their prognosis and extract important features that affect the patient's survivability. Genetic and Clinical data from 1541 patients were analyzed. Three feature selection methods and seven data mining techniques were studied and compared. Wrapper Subset method and Random Forest proved to be the best performing feature selection method and data mining technique respectively. Moreover, important genetic features such as p53 gene exon 6 and 9 mutations proved to have a significant impact on patient's overall prognosis.

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Oral Session 2: Software Engineering and Information Technology

Session Chair: Prof. Gerard Mckee, The British University in Egypt, Egypt

Time: 14:00-16:00

Venue: Ibrahim Badran Hall

IE071

14:00-14:15

Case Study: Qualitative and Quantitative Verification of File Ingestion Process

Bojan Nokovic and Salah Sharieh

Royal Bank of Canada, McMaster University, Canada

Abstract-As the key component of the aerial camera, the temperature requirement of the working environment of the CCD focal plane module is very strict. Excessive or low ambient temperature will reduce its photoelectric conversion ability. Excessive temperature level and temperature fluctuation will increase the dark current and thermal noise of the CCD device, resulting in a lower signal-to-noise ratio and affecting the image quality. Therefore, an effective thermal control scheme must be adopted to control the temperature distribution of the CCD focal plane module within the operating range. Relevant studies have shown that the dark current will increase twice as much as the original one when the temperature is increased by 6-9 C. Therefore, the temperature level is the primary factor for thermal design of FPA devices. The use and environment of FPA devices are different, and the requirements for temperature are also quite different. The camera works at high altitude and high speed. It is equipped with a front mirror to form a large field of view. The imaging spectrometer is used to image the CCD detector to obtain the spectral information of hyperspectral. Camera is a high-precision optical instrument, in which the temperature control of the key parts such as CCD detector is demanded. Due to the location and space constraints of the camera optical system, and the temperature requirements of the optical system should be taken into account; furthermore, the radiation temperature of the outer space when the camera works is larger than that generated by the CCD device, and the thermal insulation measures are adopted between the camera and the outer space, so the heat exchange between the camera and the outer environment can not be carried out while the camera works; the most important thing is that the space requirements can not adopt the active refrigeration measures. It leads to the difficulty of thermal design of CCD module in the whole system. Sinda/Fluint is

used to build a thermal simulation model of heat conduction, natural convection and radiation. The initial temperature is 15 C, the ambient radiation temperature of the chassis is 100 C, the power consumption of the CCD is up to 12.5W, and the working time of the CCD is 1000s. Under the same volume, three different thermal storage conditions were simulated respectively. The three working conditions were aluminum alloy block, copper block and phase change material. The phase change material was a composite of foam copper and paraffin. The phase transition temperature was 27.5 degrees, the latent heat of phase change was 230KJ/kg, the equivalent thermal conductivity was about 4W/ (M C), and the container of phase change material was 0.5mm thick copper. The analysis results of three working conditions show that the schemes of heat storage devices for aluminium alloy and copper blocks are simple, but they can not achieve the desired results in the same volume due to volume limitation. Although the schemes for phase change materials are complex, the effect is far greater than the former two designs and meets the design requirements in the same volume, so phase change materials are used in the design.

IE070
14:15-14:30

Decision Support System to Measure the Suitability and Compatibility of CubeSats Components and Structure with Launch Rocket Frequencies (LSCDSS)

Ayman Elzagh, Mohamed Shaheen and Sohair Rezeka

Arab Academy for Science, Technology & Maritime Transport, Egypt

Abstract-In this paper, one of the main bases when manufacturing satellites is to pass a dangerous stage, which is the launch Especially the vibrations that are exposed to it. Therefore, the research relies mainly on helping the small satellite designers of the type of Cube Sat to verify the efficiency of the body and components of the satellite to successfully pass the launch. This is why the design goes through several stages of drawing the first CAD programs and analysis programs such as ANSYS Then select the materials from which the satellite object and its components will be derived to deduce the natural fluctuations of the satellite. then manufacturing engineering model and a practical test to determine the natural frequencies and then get the results. When the model fails the test, the designer modify design, which is costly for time and money. For this Decision Support System (LSCDSS) test CubeSat deformation of structure at natural frequencies so as to handle the vibrations .by mix between the two algorithms; Ibrahim Time Domain (ITD) and Least Square Frequency domain (LSFD) to make our solution fast and more accurate. (LSCDSS) give maximum possible flexibility in the design process (LSCDSS) can also check the structure material and give indication if the satellite structure is safe or not to launching with selected launcher vehicle.

<p>IE009 14:30-14:45</p>	<p>Estimating Change Effort Using a Combination of Change Impact Analysis Technique with Function Point Analysis Jalal Shah, Nazri Kama and Nur Azaliah A Bakar Universiti Teknologi Malaysia, Malaysia</p> <p>Abstract-Software effort estimation is one of the methods that can help software project manager in making decision whether to accept or reject requirement changes. Many methods have been developed and Function Point Analysis is one of the methods that is used for software maintenance phase. Looking from software development phase, FPA method faces a challenge on performing estimation when the non-developed software artifacts exists (some of the classes are fully developed; partially developed; and not developed yet). This research aims to develop a method that improves the estimation accuracy through combination of Function Point Analysis method with Change Impact Analysis technique. An evaluation was conducted using two selected case studies where a significant accuracy achievement is achieved.</p>
<p>IE041 14:45-15:00</p>	<p>Objective and Subjective Metrics Meant for Evaluating Quality of Social Web Applications Tihomir Orehovački Juraj Dobrila University of Pula, Croatia</p> <p>Abstract-The lifetime of majority social Web applications is very short and it is common that developers change their purpose, abandon or terminate project when they realize that it has not met users' expectations. We strongly believe this is due to the lack of suitable methodologies, models, and measuring instruments meant for monitoring and examining quality of social Web applications during their life cycle. To address this issue, we initiated a research on development of a comprehensive methodology that would enable evaluation of both pragmatic and hedonic facets of quality with respect to social Web applications and facilitate their comparison at all levels in the quality model. The work this paper is dealing with presents one of the essential parts of the aforementioned methodology. After establishing the quality model in the form of the requirement tree, objective and subjective metrics in the form of performance variables were introduced. To wrap things up, we proposed elementary criteria defined as preference scales and on the example of two types of social Web applications we illustrated how elementary preference score related to estimated and perceived facets of quality can be determined</p>
<p>IE002 15:00-15:15</p>	<p>Comparative Study for Detecting Mobile Application's Anti-Patterns Kamal A. El-Dahshan, Eman K. Elsayed and Naglaa E. Ghannam</p>

Al-Azhar University, Egypt

Abstract-Software design has a main impact in the quality of the software systems. Anti-patterns are shortcomings exist in the software designs and impact negatively software quality. Mobile applications (apps) with anti-patterns have bad quality and short lifetime. Many empirical studies have assessed that the anti-patterns have a negative impact on change-proneness, fault-proneness, memory consumption and energy efficiency. In addition to that, many studies showed that there was an improvement in the user interface and memory performance of mobile apps when correcting Android anti-patterns. The aim of our research is choosing the suitable UML modeling environment to detect Mobile applications' anti-patterns via reverse engineering. So, in this research, first we present a comparative study between nine UML tools for determining the tools that have the functionality for (reverse, forward) engineering and have the ability for validating the model against the anti-patterns. Second, we apply our proposed method to generate the class diagram model of the apps through decoding the Java source code and detects the design anti-patterns in the model. For validating the proposed method, we applied it in twenty-nine Mobile apps which were downloaded from APKmirror. The proposed method detects and treats ten anti-patterns which have appeared 749 times in the twenty-nine apps.


IE034
15:15-15:30

Some Serious Deliberations and Reflections on the Significance of Non-Functional Requirements for Improving the Quality of Software

Dr. Xia Xiaoling, **Kamran Ali**, Habiba Halepoto
Donghua University, Shanghai, China

Abstract-Software design has a main impact in the quality of the software systems. Anti-patterns are shortcomings exist in the software designs and impact negatively software quality. Mobile applications (apps) with anti-patterns have bad quality and short lifetime. Many empirical studies have assessed that the anti-patterns have a negative impact on change-proneness, fault-proneness, memory consumption and energy efficiency. In addition to that, many studies showed that there was an improvement in the user interface and memory performance of mobile apps when correcting Android anti-patterns. The aim of our research is choosing the suitable UML modeling environment to detect Mobile applications' anti-patterns via reverse engineering. So, in this research, first we present a comparative study between nine UML tools for determining the tools that have the functionality for (reverse, forward) engineering and have the ability for validating the model against the anti-patterns. Second, we apply our proposed method to generate the class diagram model of the apps through decoding the Java source code and detects the design anti-patterns in the model. For validating the proposed method, we applied it in

	<p>twenty-nine Mobile apps which were downloaded from APKmirror. The proposed method detects and treats ten anti-patterns which have appeared 749 times in the twenty-nine apps.</p>
<p>IE012 15:30-15:45</p>	<p>To Enhance Effectiveness of Crowdsourced Software Testing by Applying Personality Types Zainab Umair Kamangar, Umair Ayaz Kamangar, Qasim Ali, Isma Farah, Shahzad Nizamani and Tauha Hussain Ali Mehran University of Engineering and technology Jamshoro Sindh Pakistan, Pakistan</p> <p>Abstract-Software design has a main impact in the quality of the software systems. Anti-patterns are shortcomings exist in the software designs and impact negatively software quality. Mobile applications (apps) with anti-patterns have bad quality and short lifetime. Many empirical studies have assessed that the anti-patterns have a negative impact on change-proneness, fault-proneness, memory consumption and energy efficiency. In addition to that, many studies showed that there was an improvement in the user interface and memory performance of mobile apps when correcting Android anti-patterns. The aim of our research is choosing the suitable UML modeling environment to detect Mobile applications' anti-patterns via reverse engineering. So, in this research, first we present a comparative study between nine UML tools for determining the tools that have the functionality for (reverse, forward) engineering and have the ability for validating the model against the anti-patterns. Second, we apply our proposed method to generate the class diagram model of the apps through decoding the Java source code and detects the design anti-patterns in the model. For validating the proposed method, we applied it in twenty-nine Mobile apps which were downloaded from APK mirror. The proposed method detects and treats ten anti-patterns which have appeared 749 times in the twenty-nine apps.</p>
<p>IE073 15:45-16:00</p>	<p>Evaluating the Efficiency of Energy-scape Software Rania Rushdy Moussa and Khaled Mohamed dewidar The British University in Egypt, Egypt</p> <p>Abstract-Recently, researchers were focusing on integrating renewable energy (RE) within urban environment instead of integrating renewables with buildings due to the large occupies of urban areas. Urban areas have a great potential in generating sufficient amount of energy that could satisfy the needs of urban neighborhoods. Energy-scape elements are sustainable elements that integrates RE devices with landscape elements. This research focuses on analyzing the importance and efficiency of Energy-scape software through a qualitative method. The efficiency of</p>



Energy-scape web-based application will be tested using qualitative method and a site survey. The research concludes that Energy-scape software application is an effective tool for landscape designers in using Energy-scape elements, it identifies the optimum type and location of Energy-scape elements within their projects, and it calculates the impact of using Energy-scape elements in term of energy-savings and carbon emission (CO₂) reduction.

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Oral Session 3: Computer Vision and Deep Learning

Session Chair: Prof. Samy Ghoneimy, The British University in Egypt, Egypt

Time: 14:00-16:00

Venue: Seminar Room

IE051 14:00-14:15	<p>Computer Aided Detection System for Early Cancerous Pulmonary Nodules by Optimizing Deep Learning Features Ahmed Elnakib and Hanan M. Amer Fatma Mansoura University, Egypt</p> <p>Abstract-In this paper, a deep learning technique for the early detection of pulmonary nodules from low dose CT (LDCT) images is proposed. The proposed technique is composed from four stages. Firstly, a preprocessing stage is applied to enhance image contrast of low dose images. Secondly, a transfer learning is utilized to extract deep learning features that describe the LDCT images. Thirdly, a genetic algorithm (GA) is learned on the extracted deep learning features using a training subset of the data to optimize the feature-set and select the most relevant features for cancerous nodules detection. Finally, a classification step of the selected features is performed using supported vector machines (SVM) to detect cancerous pulmonary nodules. Preliminary results on a number of 320 LDCT images acquired from 50 different subjects from the International Early Lung Cancer Action Project, I-ELCAP, online public lung image database has achieved a detection accuracy of 92.5%, sensitivity of 90%, and specificity of 95% Comparison results has shown the outstanding results of the proposed method. These preliminary results confirm the promising of our proposed method.</p>
IE0002 14:15-14:30	<p>Modeling and Simulation of Spectrometer Based on Prism Jinsong Zhou and Lei Feng Academy of Opto-electronics, Chinese Academy of Sciences, Beijing, China</p> <p>Abstract- An imaging spectrometer is an optical device that can simultaneously acquire the spectral and spatial characteristics of the target. The dispersive spectrometer based on prism is one of the most widely used techniques in remote sensing because of its structural stability and low cost. Based on optical theory, the</p>

	<p>imaging characteristics of curved prism are deduced. The numerical modeling of system is constructed by Fermat's principle and ray tracing. By calculating the intersection position of ray with the surface of each element, the intersection position with the image plane is finally obtained. Thus, the implicit function relationship between image points and object points of the system is established, which has certain significance for the theoretical simulation.</p>
<p>IE022 14:30-14:45</p>	<p>Enhancing the Automation of GUI Testing M. Medhat Kamal, Saad M. Darwish and Ahmed Elfatraty Alexandria University, Egypt</p> <p>Abstract-GUI testing is one of the most important and significant testing approaches among all different software testing techniques. Most software errors are captured and detected through the software GUI layer. Manual testing for GUIs has its problems. It lacks in capturing all different cases and takes a huge time from the software tester to plan, design and re-design the testing suites in case of UI change. Old techniques in the area of test-case generation are not fully-automated or dependent on human inputs. This paper presents a test-case generation model to build a testing suite for webpages using its HTML file. The proposed model has two branches. The first one focuses on generating test cases for each web-element individually based on its type. The other branch focuses on generating test cases based on different paths between web-elements in the same webpage. It is also concerned with eliminating redundant test-cases using a supervised learning, feed-forward, dynamic artificial neural network that changes number of inputs according to generated cases per web page. The proposed system has been evaluated using several datasets. Results show a significant enhancement in the test-case generation procedure.</p>
<p>IE030 14:45-15:00</p>	<p>Decoder-Encoder LSTM for Lip Reading Souheil Fenghour, Daqing Chen and Perry Xiao LSBU, UK</p> <p>Abstract-The success of automated lip reading has been constrained by the inability to distinguish between homopheme words, which are words have different characters and produce the same lip movements (e.g. "time" and "some"), despite being intrinsically different. One word can often have different phonemes (units of sound) producing exactly the viseme or visual equivalent of phoneme for a unit of sound. Through the use of a Long-Short Term Memory Network with word embeddings, we can distinguish between homopheme words or words that produce identical lip movements. The neural network architecture achieved a character accuracy rate of 77.1% and a word accuracy rate of 72.2%.</p>

IE038-A
15:00-15:15


Thermal Design and Thermal Simulation of High Power CCD Device for an Aeronautical Camera

XiaoYing He

AOE, China

Abstract-As the key component of the aerial camera, the temperature requirement of the working environment of the CCD focal plane module is very strict. Excessive or low ambient temperature will reduce its photoelectric conversion ability. Excessive temperature level and temperature fluctuation will increase the dark current and thermal noise of the CCD device, resulting in a lower signal-to-noise ratio and affecting the image quality. Therefore, an effective thermal control scheme must be adopted to control the temperature distribution of the CCD focal plane module within the operating range. Relevant studies have shown that the dark current will increase twice as much as the original one when the temperature is increased by 6-9 C. Therefore, the temperature level is the primary factor for thermal design of FPA devices. The use and environment of FPA devices are different, and the requirements for temperature are also quite different. The camera works at high altitude and high speed. It is equipped with a front mirror to form a large field of view. The imaging spectrometer is used to image the CCD detector to obtain the spectral information of hyperspectral. Camera is a high-precision optical instrument, in which the temperature control of the key parts such as CCD detector is demanded. Due to the location and space constraints of the camera optical system, and the temperature requirements of the optical system should be taken into account; furthermore, the radiation temperature of the outer space when the camera works is larger than that generated by the CCD device, and the thermal insulation measures are adopted between the camera and the outer space, so the heat exchange between the camera and the outer environment can not be carried out while the camera works; the most important thing is that the space requirements can not adopt the active refrigeration measures. It leads to the difficulty of thermal design of CCD module in the whole system. Sinda/Fluint is used to build a thermal simulation model of heat conduction, natural convection and radiation. The initial temperature is 15 C, the ambient radiation temperature of the chassis is 100 C, the power consumption of the CCD is up to 12.5W, and the working time of the CCD is 1000s. Under the same volume, three different thermal storage conditions were simulated respectively. The three working conditions were aluminum alloy block, copper block and phase change material. The phase change material was a composite of foam copper and paraffin. The phase transition temperature was 27.5 degrees, the latent heat of phase change was 230KJ/kg, the equivalent thermal conductivity was about 4W/ (M C), and the container of phase change material was 0.5mm thick copper. The analysis results of three working conditions show that the schemes of heat storage devices for aluminium alloy and

	<p>copper blocks are simple, but they can not achieve the desired results in the same volume due to volume limitation. Although the schemes for phase change materials are complex, the effect is far greater than the former two designs and meets the design requirements in the same volume, so phase change materials are used in the design.</p>
<p>IE075 15:15-15:30</p>	<p>Automatic Recognition of Elbow Musculoskeletal Disorders Using Cloud Application Amira Galal, Farah Hisham, Mennatallah Mohamed, Sara Hassan, Taraggy Ghanim and Ayman Nabil Misr International University, Egypt</p> <p>Abstract-Musculoskeletal disorders (MSD) are one of the leading health concerns. Automatic recognition systems for MSD detection and diagnosis from radio-graphs would be highly beneficial for supporting radiologists' task. A new automatic recognition system is introduced and specialized in diagnosing different Elbow-disorders. It is a cloud-based application attached to a labelled cloud database. Labelling dataset is achieved by expert radiologist. A comparative study is provided to record the effect of different features and classifiers on the system accuracy.</p>
<p>IE062 15:30-15:45</p>	<p>Automatic Classifier for Skin Disease Using k-NN and SVM Ann Nosseir and Mokhtar Ahmed Shawky INP &BUE/ ICS Department, Egypt</p> <p>Abstract-Accurate diagnose of skin diseases from images is good for early treatment. This work develop a novel algorithm to differentiate between Warts, Hemangiomas and Vitiligo skin diseases. The algorithm is based on both skin color and texture features (features derives from the GLCM) to give a better and more efficient recognition accuracy of skin diseases. The workcompares between accuracy of two supervised classifiers namely, k-nearest neighbor algorithm (k-NN) and Multi Support vector machine (SVM). The results of the K-NN is better 98.2%.</p>
<p>IE072 15:45-16:00</p>	<p>Deep Learning Approach for Breast Cancer Diagnosis Essam Rashed and M. Samir Abou El Seoud The British University in Egypt, Egypt</p> <p>Abstract-Breast cancer is one of the leading fatal disease worldwide with high risk control if early discovered. Conventional method for breast screening is x-ray mammography, which is known to be challenging for early detection of cancer lesions. The dense breast structure produced due to the compression process during imaging lead to difficulties to recognize small size abnormalities. Also, inter-</p>



and intra-variations of breast tissues lead to significant difficulties to achieve high diagnosis accuracy using hand-crafted features. Deep learning is an emerging machine learning technology that requires a relatively high computation power. Yet, it proved to be very effective in several difficult tasks that requires decision making at the level of human intelligence. In this paper, we develop a new network architecture inspired by the U-net structure that can be used for effective and early detection of breast cancer. Results indicate a high rate of sensitivity and specificity that indicate potential usefulness of the proposed approach in clinical use.

Parallel Presentation Sessions

Thursday April 11th, 2019

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Oral Session 4: Wireless Communication and Information System Session Chair: Prof. Omar Karam, The British University in Egypt, Egypt Time: 13:00-14:30 Venue: Boutros Ghali Hall	
IE0012 13:00-13:15	<p>Adapting the appropriate RTT timeout of TCP NewReno in a Submarine Networks Communication Hajar Bennouri, Amine Berqia and N'Guessan Koffi Patrick Ensias-Mohamed 5 University, Morocco</p> <p>Abstract- this work is the continuation of many studies of the performance of TCP in marine environment, aims at adapting the Transmission Control Protocol (TCP) NewReno in an Underwater Wireless Sensor Networks (UWSNs) by finding the appropriate parameters. In this paper we deal with another parameter in order to evaluate its effect on the performance of this TCP in UWSNs. We propose a performance improvement of the NewReno TCP by fitting the Round Time Trip (RTT) value in accordance with the UWSN characteristics. This new adaptation is simulated on the environment of the Aqua-sim simulator of Ns2 tool. The result shows that with the new parameterization of the NewReno TCP one offers better performance in terms of packet delivery gain and packet delivery retransmission rates compared to the use of the original NewReno TCP in an UWSN.</p>
IE085 13:15-13:30	<p>Implementation of Underwater Communication System Powered by Solar Energy Harvesting Sameh O. Abdellatif, Haitham Hassan, Dalia Ayman, Ahmed Hani, Amr El Ashram, Khaled Fathy and Salma Nasser The British University in Egypt, Egypt</p> <p>Abstract-This paper propose Underwater Monitoring System (UMS) whereas the system has solar/light energy harvesting equipped with the nodes. These nodes are</p>

	<p>placed underwater to report the temperature of the water from time to another. UMS is tested on one master and two slave nodes whereas the master node is on shore of the beach, while the other two are submerged underwater. Moreover, the success rate and number of transmitted packets per second are used to evaluate the system performance. Furthermore, two different types of solar panels are examined namely; amorphous and mono-crystalline. Further, different light sources are considered such as sunlight, LED and Halogen illumination. In addition, UMS is examined in terms of different containers materials as some Radio Frequency (RF) reflection signals might occur.</p>
<p>IE003 13:30-13:45</p>	<p>Performance Analysis of Transmit Diversity and Spatial Multiplexing MIMO Techniques in LTE Cell Edge Coverage Areas Haitham Hafez and Amr Mokhtar Alexandria University, Egypt</p> <p>Abstract-As Mobile data usage is becoming more and more in radio communications systems, Techniques are needed to enhance Mobile network performance and overcome problems like low-SNR at cell edges. MIMO wireless technology is one of these techniques. In LTE and LTE-A, MIMO is able to considerably enhance network performance and overcome cell edge problems by increasing the number of receive and transmit antennas. With every pair of antennas added to the system, more network performance enhancement can be achieved. This makes MIMO wireless technology one of the most important wireless techniques to be employed in 4G and 5G mobile networks in recent years. In this paper, a performance analysis of Transmit Diversity and Spatial Multiplexing MIMO techniques will be introduced studying its effect on Downlink throughput enhancement in LTE networks cell edge coverage areas.</p>
<p>IE016 13:45-14:00</p>	<p>Quantum State Feedback Control Based on the on-line State Estimation Yaru Tang and Shuang Cong University of Science and Technology of China, China</p> <p>Abstract-In this paper the state of Markovian open quantum system is estimated on-line based on the continuous weak measurement and compression sensing theory, and a quantum Lyapunov feedback control law is designed to transfer the state from the initial state to the desired target state based on the state estimated on-line. Numerical simulation experiments are implemented under MATLAB environment. The experimental results show the effectiveness of the on-line estimated state-based feedback control method proposed.</p>

<p>IE0006 14:00-14:15</p>	<p>Performance of Detection Algorithms for Massive MIMO Systems Mohammad Mahmoud Abdellatif and Ayatalla Abdelrahman The British University in Egypt, Egypt</p> <p>Abstract- MIMO or Multiple- input- Multiple- output is one of the latest technologies, which has been developed to combat the major problems encountering wireless communications. MIMO was developed to improve communication's capacity, range, reliability, throughput, to overcome bandwidth limitations, and to combat fading. This paper investigates the performance of massive MIMO which is the core of the fifth generation that is expected to be released by 2020. Massive MIMO is a promising technology that allows the use of hundreds of antennas at the base station to achieve optimal reliability, capacity, and throughput. However, it suffers from multiple limitations in the detection phase. A thorough discussion is given on the advantages that massive MIMO offers and any limitations it has. Additionally, using simulations, a comparison between the two main detection algorithm used to overcome those limitations is presented.</p>
<p>IE074 14:15-14:30</p>	<p>Bullying Hurts: A Survey on Non-Supervised Techniques for Cyber-bullying Detection Nadine Farag, Ghada Hassan, Gerard McKee and Samir El-Seoud The British University in Egypt, Egypt</p> <p>Abstract-The contemporary period is marked by the predominant place of social media in everyday life. Despite social media being great for communication and social gathering it also offers opportunities for criminal activities. One of these activities is cyber-bullying and research into computer-based methods for detecting cyber-bullying is the response of the scientific research community. An extensive literature search shows that supervised learning techniques are the most commonly used methods for cyber-bullying detection. However, some non-supervised techniques and other approaches have proven to be effective towards cyber-bullying detection. This paper, therefore, surveys recent research on non-supervised techniques and offers some suggestions for future research in texture-based cyber-bullying detection including detecting roles, detecting emotional state, automated annotation and stylometric methods.</p>

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Oral Session 5: Network and Internet of Things Technology

Session Chair: Prof. Khaled Nagaty, The British University in Egypt, Egypt

Time: 13:00-14:30

Venue: Ibrahim Badran Hall

IE0004 13:00-13:15	<p>Telemedicine: An IoT Application for Healthcare Systems Mohammad Mahmoud Abdellatif and Walaa Mohamed The British University in Egypt, Egypt</p> <p>Abstract- Telemedicine is the abstract term used to define medical services delivered through Information Technology and Telecommunications. With the growing advancements in the field of data mining, pattern recognition, expert systems, and image processing, the motivation of such a technology has increased. This allowed Telemedicine to be a stable solution especially because people are starting to trust the system more for its higher accuracy. This paper proposes a Telemedicine platform between the patient and the doctor. This platform belongs to the internet of medical things (IoMT) by enabling multiple medical sensors to connect to a server either using Wi-Fi, Bluetooth or GSM technologies. Moreover, wearable and implanted electronics can be integrated with the proposed system as well. The system collects data from several sensors and sends them using one of the aforementioned technologies using an Arduino Board, Matlab, and C#. Furthermore, a comparative study between the three communications technologies used to connect the medical sensors to the server is investigated. A recommendation of the best suited technology is provided with regard to the nature of the application itself.</p>
IE1001 13:15-13:30	<p>An Enhanced SHA3-based Hashing Method: A Side-channel aAttack Countermeasure A.Samir Abo-Taleb, Dr. M. Nabil, Dr. M. Shalaby and Prof. Dr. Salwa Elramly Ain Shams University, Electronics and Communication Department, Egypt</p> <p>Abstract-When a software implementation of a security system is considered, side channel attacks are on the spot threat. Side-channel attacks, considered in this work, are a class of physical attacks in which an adversary tries to exploit physical</p>

	<p>information leakages such as timing information, power consumption, or electromagnetic radiation to estimate security system parameters during performing security algorithms. New system architecture features, such as larger cache sizes and multicore processors, have increased the prevalence of side channels, in addition to, the availability of measurement apparatuses to an attacker. Thus, software developers must be aware of the potential for side-channel attacks and plan appropriately. In this paper, we propose a software implementation of a hashing method based on SHA3-512 hashing algorithm that can counteract the side-channel attacks. To achieve our goal, we use three techniques, first, we shuffle the dataset, salt, and process selector arrays using "Fisher Yates" algorithm. Second, we use volatile memory objects to hold critical data. Finally, we apply the thread locking technique where at most one thread can access the critical objects at a time. Experimental results show that our proposed hashing method is more secure than other related methods. Although there is a trade-off between hashing security and hashing processing time, the processing time of the proposed hashing method is still acceptable.</p>
<p>IE0007 13:30-13:45</p>	<p>Performance Evaluation of RPL in High Density Networks for Internet of Things (IoT)</p> <p>Muneer Bani Yassein, Ameena Flefil, Dragana Krstić, Yaser Khamayseh, Wail Mardini and Mohammed Shatnawi 1.2.4.5.6. Jordan University of Science and Technology, Jordan; 3. Faculty of Electronic Engineering, University of Niš, Serbia</p> <p>Abstract- The performance evaluation of network protocols in high-density networks could be a challenge issue due to the large number of nodes which dealing with actual testbeds. Thus, simulations are usually used. This paper presents a simulation study results for RPL protocol in high-density networks. Two objective functions were used, namely: the Objective Function Zero (OF0) and the Minimum Rank with Hysteresis Objective Function (MRHOF)). Grid topology is studied, and three performance metrics were used: Packet Delivery Ratio (PDR), Power Consumption, and Number of hops (Hop Count). The evaluation and comparison of the two objective functions are based on three parameters: number of nodes, successful reception ratio (RX) and network topology. The results of the simulation disclose that these parameters have a significant effect on the PDR, consumed power, and the Hop Count. The results show that the RPL performance can provide a better performance for OF0 that MRHOF could not provide.</p>
<p>IE047 13:45-14:00</p>	<p>Towards an Importance of Security for Cyber-Physical Systems/Internet-of-Things</p> <p>Shafiq ur Rehman, M. Ceglia, S. Siddiqui, Volker Gruhn University of Duisburg-Essen, Germany</p>

Abstract-Cyber-Physical Systems (CPS) and Internet-of-Things (IoT) are rising in an importance for the modern world, security is a significant requirement in the development process. This paper presents an overview of how these systems generally work and why securing them at three different layers that are more important compared to traditional software. Since human beings directly interact with the physical devices, therefore it is important to guarantee that they are secure at any point in time. If an intruder gains control over an autonomous car driving system, the consequences could be life-threatening to many people. Cyber-security is trying to prevent this worst-case scenario but struggles with two major problems: First, CPS/IoT are typically a combination of many separate systems. These systems are often legacy software, which sometimes is no longer up-to-date and could provide many security issues, which are hard to patch since the original developers are not part of the new project. Second, classic security measures aimed at the application and the network layer but CPS/IoT provides a third, physical layer, which needs to be protected. Sensors and actuators are physical parts of the real environment and can be damaged or destroyed by any human intruder or natural disaster if not secured properly. Since security in CPS and IoT have been dramatically neglected in the past years, this paper aims at understanding the security of CPS and IoT. Therefore, in this paper we propose an architecture, where we analyzed the security threats for CPS/IoT. Hence, can easily determine the security requirements for CPS/IoT.

IE0011

14:00-14:15

A New Method to Improve Voice over IP (VoIP) Bandwidth Utilization over Internet Telephony Transport Protocol (ITTP)

Mosleh Abualhaj, Mayy Al-Tahrawi and Sumaya Al-Khatib
Al-Ahliyya Amman University, Amman, Jordan

Abstract-The world witnessed a revolution of new technologies that serve humankind and make their life easier. Voice over Internet Protocol (VoIP) is one of such technologies. VoIP is a technology of making voice calls over an IP network. One of the problems that slow the spreading of VoIP is the inefficient bandwidth utilization that resulting from the big packet header. In this paper, we proposed a new method to enhance VoIP bandwidth employment over the Internet Telephony Transport Protocol (ITTP) protocol. The proposed method improves VoIP bandwidth utilization from two dimensions. The first dimension is by multiplexing several VoIP packets to the same receiving end in one header, instead of a separate header for each VoIP packet. The second dimension is by compressing the VoIP packet payload. The evaluation result of the proposed method showed a noticeable reduction of the consumed bandwidth, by up to 48.9%, in comparison to the traditional method of ITTP without VoIP packets multiplexing or VoIP packet payload compression.

IE052

14:15-14:30

Blockchain and Smart cContracts

Manar Abdelhamid and Ghada Hassan

The British university in Egypt, Egypt

Abstract-This literature review provides a complete and detailed documentation of the new technological and new state of the Blockchain technology as well as the smart contract technology. This literature review is required for the Blockchain technology to function well with the smart contract as a technological enabler for innovation and the required factors for success. Blockchain is a fast-disruptive technology becoming a key instrument in share economy. This paper also reviews blockchain-based "smart contracts," which aim to automatically and securely execute the needed responsibilities without the support of a centralized execution authority. Nowadays Blockchain is receiving a huge attention in the industry as it become one of the most important technology that helps many companies to function better in different sectors. A new feature of blockchain technology is smart contract. Smart contract runs on top of the blockchain to facilitate, execute and enforce an agreement between un-trusted parties without the interfere of third party to trust it as smart contract is an executable code that runs with some rules on the blockchain. In this paper, we will review all the important information about the smart contract and blockchain. Further smart contracts do have some features that might serve the goals of social justice and fairness. Also the review will conduct a comparison between the different methodologies that is used in the smart contracts. All the smart contract problems are focused mainly in four key issues are identified, namely, codifying, security, privacy and performance issues. The main aim is to get the whole idea about smart contract in the blockchain from different perspective and different point of view for different developers. It will also include the Blockchain and smart contract for all domains which like real estate, voting system, supply chain and so on. A detailed step of Blockchain and smart contract is presented. By the end of this paper the developer will have a big picture to help in the decision process by illustrating what a blockchain is and the smart contract effect in each sector, then analyzing its advantages and disadvantages, as well as discussing several use cases taken from different sector.

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Oral Session 6: Knowledge Engineering and Knowledge Management

Session Chair: Prof. Vladimir Geroimenko, The British University in Egypt, Egypt

Time: 13:00-14:30

Venue: Seminar Room

IE025 13:00-13:15	<p>Bio-inspired Expert System for Identifying Questioned Documents' Printer Source Suitable for Digital Forensics Adel A. EL –Zoghabi, Saad M. Darwish, and Hany M. Elgohary Alexandria University, Egypt</p> <p>Abstract-Printer identification models are provided for the goal of distinguishing the printer that produced a suspicious imprinted document. Source identification of a published document can easily be a significant procedure intended for the forensic science. The arising problem is that the extraction of many features of the printed document for printer identification sometimes increases time and reduces the classification accuracy since a lot of the document features may come to be repetitive and non-beneficial. Distinct combinatorial collection of features will need to be acquired in order to preserve the most effective fusion to accomplish the maximum accuracy. This paper presents an intelligent machine learning algorithm for printer identification that adopts both of texture features formulated from gray level co-occurrence matrix of the printed letter "WOO" and genetic heuristic search to select the optimal reduced feature set. This integration aims to achieve high classification accuracy based on small group of discriminative features. For classification, the system utilizes k-nearest neighbors (KNN) to recognize the source model of the printer for its simplicity. Experimental results validate that the suggested system has high taxonomy accuracy and requires less computation time.</p>
IE036 13:15-13:30	<p>Brainstorming Versus a Scenario-based Approach: Results of an Empirical Study Aldrin Jaramillo Franco and Germán Urrego Giraldo University of Antioquia, Colombia</p> <p>Abstract-Although important advances have been made to improve the requirements elicitation process, this problem is still a challenging research topic for the Requirements Engineering community. Motivated by this fact, we propose</p>

	<p>the CREAS method (Creative Requirements Elicitation Assisted by Scenarios), an approach for requirements elicitation that leverages and brings together scenario-based and creativity techniques. In this paper, we seek to answer the following research question: Does CREAS have a better impact on the elicitation of requirements with respect to a Brainstorming process? To answer this question, we have designed and run a quasi-experiment to compare CREAS and Brainstorming under similar conditions. The participants were required to elicit the requirements for two different problems in two different sessions using both approaches. Results evidence the existence of significant differences between the methods. The statistical outcomes show that the requirements obtained with CREAS are more complete, precise and present less over-specification.</p>
<p>IE053 13:30-13:45</p>	<p>Portfolio Selection Factors: Egypt Equity Market Case Study Heba Salah ElSelmy, Ayman Ghoneim and Ihab A. Elkhodary Cairo University, Egypt</p> <p>Abstract-Microfinance allows the integration of all sectors for the country's economic growth. Data duplicity, invalid data and the inability to have reliable data for decision-making are generated without a formal Governance. For this reason, Data Governance is the key to enable an autonomous, productive and reliable work environment for the use of these. Although Data Governance models already exist, in most cases they don't meet the requirements of the sector, which has its own characteristics, such as the volume exponential growth, data criticality, and regulatory frameworks to which it is exposed. The purpose of this research is to design a reference model for the microfinance organizations, supported by an evaluation tool that provides a diagnosis with the objective of implementing and improving the organization processes regarding Data Governance. This model was implemented based on the information of Peru's microfinance organizations, from which a 1.72 score was diagnosed, which is encouraging for the organization, since it shows that it has defined all its plans concerning Data Governance. Finally, after the validation, it was concluded that the model serves as a medium to identify the current status of these organizations to ensure the success of the Data Governance initiatives.</p>
<p>IE044 13:45-14:00</p>	<p>Knowledge Management System Architecture based on Cultural Algorithms Víctor Hugo Medina García, Marino Mejía Rocha and Lina María Medina Estrada Universidad Distrital "Francisco José de Caldas", Colombia</p> <p>Abstract-Microfinance allows the integration of all sectors for the country's economic growth. Data duplicity, invalid data and the inability to have reliable data for decision-making are generated without a formal Governance. For this reason,</p>

	<p>Data Governance is the key to enable an autonomous, productive and reliable work environment for the use of these. Although Data Governance models already exist, in most cases they don't meet the requirements of the sector, which has its own characteristics, such as the volume exponential growth, data criticality, and regulatory frameworks to which it is exposed. The purpose of this research is to design a reference model for the microfinance organizations, supported by an evaluation tool that provides a diagnosis with the objective of implementing and improving the organization processes regarding Data Governance. This model was implemented based on the information of Peru's microfinance organizations, from which a 1.72 score was diagnosed, which is encouraging for the organization, since it shows that it has defined all its plans concerning Data Governance. Finally, after the validation, it was concluded that the model serves as a medium to identify the current status of these organizations to ensure the success of the Data Governance initiatives.</p>
<p>IE059 14:00-14:15</p>	<p>Data Governance Reference Model under the Lean Methodology for the Implementation of Successful Initiatives in the Peruvian Microfinance Sector Alvaro Romero, Antony Gonzales and Carlos Raymundo Universidad Peruana de Ciencias Aplicadas (UPC), Perú</p> <p>Abstract-Microfinance allows the integration of all sectors for the country's economic growth. Data duplicity, invalid data and the inability to have reliable data for decision-making are generated without a formal Governance. For this reason, Data Governance is the key to enable an autonomous, productive and reliable work environment for the use of these. Although Data Governance models already exist, in most cases they don't meet the requirements of the sector, which has its own characteristics, such as the volume exponential growth, data criticality, and regulatory frameworks to which it is exposed. The purpose of this research is to design a reference model for the microfinance organizations, supported by an evaluation tool that provides a diagnosis with the objective of implementing and improving the organization processes regarding Data Governance. This model was implemented based on the information of Peru's microfinance organizations, from which a 1.72 score was diagnosed, which is encouraging for the organization, since it shows that it has defined all its plans concerning Data Governance. Finally, after the validation, it was concluded that the model serves as a medium to identify the current status of these organizations to ensure the success of the Data Governance initiatives.</p>
<p>IE061 14:15-14:30</p>	<p>Towards a Pedagogical Model of Social Justice in Engineering Education Patricia Jimenez, Jimena Pascual and Andres Mejia Pontificia Universidad Catolica De Valparaiso, Chile</p>

Abstract-This paper studies the perceived relationship between engineering and social justice and discusses a pedagogical model for engaging engineering students with social concerns. Engineering faculty were surveyed on their appraisal of different social-justice related constructs and the results indicate they associate engineering more to environmental and ethical responsibility than to public concerns such as peace, public service and gender equality. Student opinions were assessed in a focus group setting. They perceive the importance of addressing social-justice issues and consider that the university provides insufficient opportunities to develop competencies in this area. The model framework offers different pedagogical dimensions and practices that can be included in macro and micro-curricular designs. These practices seek to counter the effects of the three pillars of an “engineering culture of disengagement” (Cech [1]).



14:30-15:00 Coffee Break

✧ Tips:

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Oral Session 7: Software and Knowledge Engineering

Session Chair: Dr. Ayman Ghoneim, The British University in Egypt, Egypt

Time: 15:00-16:00

Venue: Boutros Ghali Hall

IE039
15:00-15:15

A Layered-analysis of the Features in Higher Education Data Set
Eslam Abou Gamie, Mostafa A. Salama and M. Samir Abou El-Seoud
The British University in Egypt, Egypt


Abstract-Machine learning is applied on high education for analyzing the interaction between the students and electronic learning systems. This type of analysis serves in predicting of the student scores, in alerting students-at-risk, and in managing the degree of student engagement to educational system. The approaches in this work implements the divide and conquer algorithm on feature set of an educational data set to enhance the analysis and prediction accuracy. It divides the feature set into a number of logical subgroups based on the problem domain. Each subgroup is analyzed separately and the final result is the combination of the results of the analysis of these subgroups. The classifier that shows the best prediction accuracy is dependent on the logical non-statistical nature of the features in each group. This approach provides the possibility to apply a brute force algorithm in the selection of the best feature subgroups with a low computational complexity. The experimental work shows a high prediction accuracy of the students-at-risk relative to the current research, and provides a list of new important features in the field of electronic learning systems.

IE079
15:15-15:30

Building a Sentiment Analysis System Using Automatically Generated Training Dataset
Daoud M. Daoud, Samer Aoudi and M. Samir Abou El-Seoud
Higher Colleges for Technology, UAE

Abstract-In this paper, we describe a procedure for extracting annotated Arabic negative and positive tweets. We use these extracted annotated tweets to build our sentiment system using Naive Bayes with TF-IDF enhancement. The large size of training data for a highly inflected language is necessary to compensate for the

	<p>sparseness nature of such languages. We present our techniques and explain our experimental system. We automatically collect 200 thousand annotated tweets. The evaluation shows that our sentiment analysis system has high precision and accuracy measures compared to existing ones.</p>
<p>IE031 15:30-15:45</p>	<p>A Cloud-based Educational and Career Guidance Model using Fuzzy Logic Concepts Hosam F. El-Sofany^{1,2} and Samir A. El-Seoud ¹ King Khalid University, Abha, UAE ² Cairo Higher Institute for Engineering, Computer Science and Management, Cairo, Egypt</p> <p>Abstract-choosing a career is an important objective for students and graduates, since the choice is done at a relatively early age, and based on several criteria. The right decision for choosing a career will affect positively on the academic level of students and professional life of the graduates, and vice versa. As a result the importance of career guidance increases. Career guidance services include three main components: career information, career counseling and career education. The main services models for cloud computing includes: software, platform and infrastructure (as a service), to satisfy the needs of different kinds of organizations. By using cloud computing concepts, we will open some important area that is likely to have positive implications for career guidance. From cloud computing point of view, we introduce the proposed application as Career-as-a-Service (CAAS) model. The identification of system inputs, outputs, and rules are controlled by fuzzy logic operations. The main objectives of the proposed system model includes: (1) help students to choose appropriate colleges that suitable to their academic ability; (2) help and support graduates to choose the appropriate job (or career) to their ability, scientific skills, and practical experiences; (3) provide graduates with the required training courses to accept them in a specific career; (4) to contribute for implementing an applied software product that can be used in relevant organization and companies in KSA and Egypt. This research study presents a prototype development of a career guidance system that provides a career guidance services to students and graduates automatically using fuzzy logic and cloud computing concepts Keywords: Career guidance; Cloud computing; Fuzzy logic, Software as a service, System model.</p>
<p>IE076 15:45-16:00</p>	<p>A Framework for Integrating Software Design Patterns with Game Design Framework Nahla H. Barakat The British University in Egypt, Egypt</p>




Abstract-Object oriented design patterns (DP) are meant to provide a common structure for solving common software development problems. Applying those patterns is expected to improve the software systems maintainability, comprehensibility, and provide a common language for developers to understand and effectively communicate. However, this was not always the case, where some studies have shown that using design patterns may lead to a system harder to maintain and understand and more error prone; as compared to same systems without the use of design patterns. This variation is referred to the features of the system on hand, and the experience of the developers who are capable to know what design patterns to use and when. Considering the video game development, the use of software design pattern is still at low scale, and still; there is no recipe on what and when to use design patterns. In the meantime, there are different game design frameworks that define different aspects which need to be considered when developing a game. In this paper, we propose a framework that integrates some creational and behavioral DP, with a specific game design framework. In this way, we claim that the developers will have some hints on what DP to use with the main game aspects. This framework is suitable for games which can be developed after the first course of game design, regardless of the game engine used for development. The framework can be extended with more DP, for larger scale and more sophisticated Game.

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Oral Session 8: Computer Vision, Deep Learning and Data Mining	
Session Chair: Dr. Amr Ghoneim, The British University in Egypt, Egypt	
Time: 15:00-16:00	
Venue: Ibrahim Badran Hall	
IE078 15:00-15:15	<p>Commit Message Generation from Code Diff's using Hidden Markov Models Ahmed Awad and Khaled Nagaty The British University in Egypt, Egypt</p> <p>Abstract-Commit messages are developer-written messages that document code changes. Such change might be adding features, fixing bugs or simply code updates. Although these messages help in understanding the evolution of any software. It is quite often that developers disregard the process of writing these messages when making a change. Many automated methods have been proposed to generate commit messages. Due to the inability of those techniques to represent higher order understanding of code changes, most of them did not provide less contextual commit messages as opposed to developer-written messages. To solve this problem, [1] proposed the use of generative deep learning models. Specifically, sequenceto-sequence models to automate that task. This model delivered promising results on translating diff changes to commit messages. [2] has thoroughly investigated the performance reported in [1] and found out: code diffs corresponding to almost every high quality commit messages generated by [1] are very similar to one or more code diffs in the training diffs on a token level. Motivated by that observation, [2] proposed NNGEN which outperforms [1] by 21% in BLEU scores. In this paper, we hypothesize that seq2seq model in [1] was simply overfitting. This is supported by the fact that [2] reported that after removing 16% of the commits in [1] dataset, which belonged to the same class, Seq2seq performance in [1], degraded by 6.62 in BLEU scores. Inspired by the traditional solution to sequence modelling; Hidden Markov Models, we show that HMMS will outperform NNGEN for commit message generation when compared against the dataset in [1].</p>
IE055 15:15-15:30	<p>Mutation Testing Cost Reduction Using K-Means and Differential Evolution Madonna Mayez, Abeer Hamdy and Ayman Ghoneim</p>

	<p>The British University in Egypt, Egypt</p> <p>Abstract-Mutation testing is considered one of the most powerful testing techniques. It is a white box testing technique used to assess the adequacy of a test suite or to guide the generation of test cases. It is based on generating faulty versions of the software under test (mutants) then run them against the test suite. So, it is computationally expensive; and consequently it is not widely preferred by software testers. The paper proposes a novel methodology to reduce the cost of the mutation testing through clustering similar mutants. A hybrid K means-Differential evolution approach is used for this purpose. The similarity among mutants is measured through the overlap among the test cases that can kill them. Experimental results showed that our methodology can reduce the cost of the mutation testing in terms of the number of mutants. This percentage is resulted by dividing the mutation score before applying the algorithm over the mutation score after applying our algorithm.</p>
<p>IE068 15:30-15:45</p>	<p>Monitoring Baby Status While Sleeping Using K-NN and MSVM Classifiers Ann Nosseir INP &BUE/ ICS Department, Egypt</p> <p>Abstract-Parents keep monitoring their babies while sleeping to confirm their safety and comfort. A regular baby check is not easy. There are different products in the market that help parents to monitor their babies. Some products are wearable systems that are sensor based and the majority are camera-based. It is either video streaming and parents check that often or sensors information that is about heartbeat, temperature or motion. These systems are not cheap especially for families live in low income countries. This work presents a low cost novel idea that provides parents information about their babies' discomfort statuses while sleeping. the system is based on real data which is not common for other systems. The system implemented reports status of the baby like being wet, sick, feeling hot, moving, or a combination of these statuses. The architecture of the system has four layers. The first layer is the input sensors that are room temperature, baby temperature, urine, and sound sensors to capture different information about the baby and his/her environment. the second layer is the storage, where the capture data is stored. The third is a developed classifier to accurately predict the baby status. M- SVM and KNN have the best accuracy.</p>
<p>IE088 15:45-16:00</p>	<p>A Comprehensive Review on Volume Rendering Techniques Amr S. Mady and M. Samir Abou El Seoud Halan Inc., Egypt</p>



Abstract-Volume rendering (VR) is amongst the most valuable techniques in medical visualizations, or computer-aid diagnosis and other areas that are related. This study discusses and review the varying methods and techniques used to deliver a volume rendering technique.

Poster Session

Wednesday April 11th, 2019

Time: 14:00-16:00

Venue: Building C

IE018	<p>Healthcare Augmentation: Social Adoption of Augmented Reality Glasses in Medicine Kayode Ibrahim Adenuga, Rahmat Olawunmi Adenuga, Abdallah Ziraba, Penn Emmanuel ICT University Messassi, Cameroon</p> <p>Abstract-Healthcare sector is recognized as one the most important sectors for the well-being of humanity. The recent technological advancements has brought about great enhancements in healthcare delivery. Augmented Reality (AR) is a phenomenon whereby real life objects in a recognized environments are amplified by additional visual information in order to support the process of augmentation. The benefits afford the opportunity to diagnose patient disease conditions during surgical procedure with high accuracy and precisions thereby reducing the incidence of medical errors. In spite of the numerous benefits AR technology has offered, its widespread adoption in clinical perspectives most especially towards enhancing medical practice and education in developing countries and Sub-Saharan African countries in particular has received little academic attention. The objective of this paper therefore is to examine some of these factors and propose a theoretical model of adoption for AR technology which can be validated in future studies.</p>
IE019	<p>Big Data in Healthcare: Are we getting useful insights from this avalanche of data? Kayode Ibrahim Adenuga, Oladele Idris Muniru, Fatai Idowu Sadiq, Rahmat Olawunmi Adenuga, Muhammed Jamiu Soliudeen ICT University Messassi, PMB 526 Yaounde, Cameroon</p> <p>Abstract-The benefits of deriving useful insights from avalanche of data available everywhere cannot be overemphasized. Big Data analytics can revolutionize the healthcare industry. It can also ensure functional productivity, help forecast and suggest feedbacks to disease outbreaks, enhance clinical practice, and optimize healthcare expenditure which cuts across all stakeholders in healthcare sectors. Notwithstanding these immense capabilities available in the general application of</p>

	<p>big data; studies on derivation of useful insights from healthcare data that can enhance medical practice have received little academic attention. Therefore, this study highlighted the possibility of making very insightful healthcare outcomes with big data through a simple classification problem which classifies the tendency of individuals towards specific drugs based on personality measures. Our model though trained with less than 2000 samples and with a simple neural network architecture achieved mean accuracies of 76.87% (sd=0.0097) and 75.86% (sd=0.0123) for the 0.15 and 0.05 validation sets respectively. The relatively acceptable performance recorded by our model despite the small dataset could largely be attributed to number of attributes in our dataset. It is essential to uncover some of the many complexities in our societies in relations to healthcare; and through many machine learning architectures like the neural networks these complex relationships can be discovered.</p>
IE027	<p>Ontology-Based Smart Attendance using Android Mobile Application in Higher Institution Fatai I. Sadiq^{1,2}, Akpe A.C. Ehinomen², Bobadoye, S. Temidayo^{2,b}, Kayode I. Adenuga³ and Soliudeen, M. Jamiu ¹Universiti Teknologi Malaysia, Malaysia ² Ambrose Alli University, Nigeria ³ ICT University, Cameroon ⁴ Federal Polytechnic, Nigeria</p> <p>Abstract-In traditional attendance in the most institution, the lecturers rely on attendance sheet pass across to students to sign. With the increase in the number of students nowadays, the difficulties in attendance record have increased tremendously. Also, as attendance is pass round to some students, the student added the name of a friend who is not physically present. The system is time-consuming and inadequate. To address this inadequacy, this paper proposes an Ontology-Based Smart Attendance (OBSA). The paper presents OBSA with a mobile application as an agent that automatically mark a student's attendance when the student gets to the faculty with their login detail. OBSA also synchronizes the students' public information with the faculty agent, thereby suggesting events to students in the faculty. An Android Mobile Application Porotype (AAMAP) is developed using Java to monitor the attendance system.</p>
IE0003-A	<p>Artificial intelligent approach for the optimal strategies of periodic watering street tree problem Yi-Chih Hsieh ¹, Cheng-Dar Liou ², Thanh Thu To³</p>

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To decrease air pollution in cities, planting more green trees along the streets is a common and popular way adopted by most of governments. It is well known that periodic street tree watering is extremely important to tree's growth. However, different types of trees have different needs of water in frequency and quantity. For example, once per day, once per two days, and once per three days. In this paper, we investigate the periodic watering street tree problem (PWSTP) in which multiple types of vehicles are scheduled to periodically water different types of trees on the streets. More specifically, there are two types of capacity for vehicles, namely, big vehicle and small vehicle. For each day, there are five options to choose vehicles, namely, one big vehicle, one small vehicle, one big vehicle and one small vehicle, two big vehicles, two small vehicles, respectively.

The PWSTP is an extended problem of the periodic vehicle routing problem (PVRP) in which vehicles have to periodically deliver goods to multiple demand points. The main difference between PWSTP and PVRP is that the former studied in this paper have to simultaneously obtain the optimal strategy of vehicles and their watering sequence of trees on the streets. However, PVRP assumed that the type and number of vehicles are given. The objective of the considered PWSTP is to minimize the total

routing length of vehicles and the cost of vehicles such that various watering demands are satisfied for all streets during the time horizon of six days. In this paper, we propose a novel encoding scheme to directly convert any random sequence of integers into a feasible solution of the PWSTP. It means that any random sequence of integers can be used to present a possible strategy of watering, including the number of vehicles, the capacities of vehicles, and the watering sequence of each vehicle. The novel encoding scheme is then embedded in both immune algorithm and genetic algorithm to solve the PWSTP. Finally, a practical case in Ho Chi Minh city, Vietnam, was solved. Numerical results showed that the proposed these two algorithms can effectively solve the PWSTP. Additionally, immune algorithm outperforms genetic for solving the PWSTP. However, genetic algorithm is faster than immune algorithm.

Closing Session

16:00-16:30 at Auditorium

