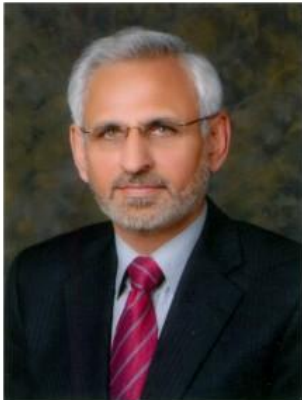


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Welcome Message from the President



It is my pleasure to welcome all participants to the Second International Conference organized by the College of Computing & Information Sciences on 26-27 March, 2018. As research plays an extremely important role in both, the academia and industry, therefore such activities help to nurture a healthy research environment.

This second ICCIS will provide an ideal nurturing platform for students, academicians, researchers and representatives from industry to mingle with each other in the most cordial environment for fruitful exchange of information and research ideas. It will also help to promote a collaborative Research and Development. The conference featuring technical paper presentations, panel discussions and keynote speeches by eminent national and international speakers and leading industry personnel would indeed prove to be a very effective forum.

I am hopeful that this conference by the College of Computing & Information Sciences would provide an opportunity to all participants, to share latest research in various areas of computing and information sciences. I look forward to highly meaningful and productive sessions and hope that we all would learn something new from this two-day conference.

Air Vice Marshal Tubrez Asif, PAF Ret'd.

President,
PAF-KIET

Message from the Dean Academics



It is indeed nice to be a part of the conference organized by College of Computing and Information Sciences (CoCIS) in 2018. Holding regular conferences shows the dynamism of the College and provides an opportunity for the researchers of various institutions to meet and exchange ideas in what is happening in the world now but most important of how the future is shaping up. The areas covered in this conference are fairly wide spread and include Machine Learning, Software Engineering, Distributed Computing, Computer Networks and Digital Image Processing etc.

The numbers of abstracts submitted for the conference were 76 and it must have been indeed difficult for the reviewers and organizers to select 24 for presentation in the conference. I am hopeful that the outcome of the conference is going to be positive and would result in promotion of the field of computer science. I would like to thank all the participants taking part in the conference and making it a big success.

Professor Dr. Muzzaffar Mahmood

Dean Academics

Message from the Director CoCIS



We are living in an era of evolution in which remarkable changes are taking place. From human less manufacturing to rocket based air travel, the future seems amazing. This is due to the research and development in all the related fields. However, computer science has established its role as the binding force for the inter disciplinary research and development. The 2nd International Conference organized by College of Computing and Information Sciences shows PAF-KIET commitment towards research and innovation.

I am happy that we have received many submissions from the industry and this industry academia relationship is the order of the day. I thank the key note speakers and authors for trusting this platform and I appreciate the efforts of the organizing and technical committee members as well.

Dr. Muhammad Khalid Khan,
Director,
College of Computing & Information Sciences

Conference Committees

Organizing Committee

- Dr. Muhammad Khalid Khan (Chair)
- Dr. Taha Jilani
- Mr. Furqan Abbasi

Technical Committee

- Dr. Muzaffar Mahmood (Chair)
- Dr. Anh Nguyen-Duc
- Dr. Mohd Fadzil Bin Hassan
- Dr. Khurram Nazeer Junejo
- Dr. Maaz Bin Ahmed
- Dr. Bilal Qadri
- Dr. Hussain Pervaiz
- Dr. Imran Naseem
- Dr. Tariq Mahmood
- Dr. S.M.K. Raazi
- Dr. Ghazanfar Monir
- Dr. Imran Jami
- Dr. Shoukat Wasi
- Dr. Muhammad Amir
- Dr. Faraz Zaidi
- Dr. Ayaz Khan
- Dr. Kamran Nishat
- Dr. Saud Zia

Conference Program Schedule

1st Day of the Conference	
Monday, March 26, 2018 (9:30 am to 4:30 pm)	
Arrival of Guests, Participants / Registration	09:30 am
Guests to be seated	09:50 am
Opening Ceremony / Tilawat	10:00 am
Opening Address (Director CoCIS – Dr. Muhammad Khalid Khan)	10:05 am
Welcome Address (President PAF-KIET – AVM (retd) Tubrez Asif)	10:15 am
Conference Brief (Dean Academics – Dr. Muzaffar Mahmood)	10:25 am
Plenary Talk 1: Dr. Mohamed Amin Embi (Malaysia)	10:35 am
Plenary Talk 2: Dr. Irfan Hyder (Pakistan)	10:55 am
Address by Chief Guest	11:20 am
Distribution of Souvenirs to Chief Guest and Plenary Speakers	11:30 am
Tea – Break	11:40 am – 12:00 noon
Plenary Talk 3: Dr. Ibrahima Faye (Malaysia)	12:05 pm
Plenary Talk 4: Dr. Hasina Khatoon (Pakistan)	12:25 pm
Distribution of Souvenirs to Plenary Speakers	12:50 pm
Namaz & Lunch break	01:00 pm – 02:00 pm
Technical Session I – Session Chair (Dr. Mohamed Amin Embi)	02:00 pm – 04:30 pm
Technical Session II – Session Chair (Dr. Ibrahima Faye)	02:00 pm – 04:30 pm

2nd Day of the Conference	
Tuesday, March 27, 2018 (10:00 am to 5:00 pm)	
Arrival of Guests, Participants / Registration	10:00 am
Guests to be seated	10:10 am
Technical Session III – Session Chair (Dr. Bhawany Shankar)	10:15 am – 12:45 pm
Technical Session IV– Session Chair (Dr. Tahir Riaz)	10:15 am – 12:45 pm
Namaz & Lunch break	01:00 pm – 02:00 pm
Start of Closing Ceremony	02:00 pm
Tilawat	02:10 pm
Plenary Talk 5: Dr. Tahir Riaz (Denmark)	02:15 pm
Plenary Talk 6: Dr. Bawany Shankar (Pakistan)	02:40 pm
Launching of “KIET Journal of Computing & Information Sciences”	03:05 pm
Address by Chief Guest	03:10 pm
Distribution of Souvenirs to the Chief Guest and Plenary Speakers	03:30 pm
Panel Discussion “Academia Industry Relationship – The Way Forward” with Q & A session	03:50 pm – 04:20 pm
Closing Remarks (President PAF-KIET – AVM (retd) Tubrez Asif)	04:20 pm
End of Closing Ceremony / High Tea	04:30 pm – 05:00 pm



Keynote Speakers



Dr. Mohamed Amin Embi

Chief Information Officer / Director,
Universiti Kebangsaan, Malaysia.

Talk Title: Redesigning e-Learning for Education 4.0

Whether we like it or not, the fourth industrial revolution will ultimately transform the landscape of higher education. Global connectivity, smart machines and new media are some of the drivers reshaping how we think about work, how we learn and develop the skills to work in the future. Most people will have at least four to five different careers, requiring fundamental reeducating, whilst the relentless speed of innovation will constantly demand new skills and knowledge to keep pace. Educationalists today are still debating what the future of education (Education 4.0) will look like - the many ways in which the content of education and the process of learning will need to change over the years ahead. In principle, Education 4.0 should harnesses the potential of digital technologies, personalized data, open sourced content and the new humanity of this globally-connected world. The problem is that most educators are still teaching the way they were taught in the past. Hence, there is a need to revisit the traditional conception of teaching often referred to as pedagogy. It is time that we explore new ways to redesign learning including e-Learning so that it is relevant to the growing challenges of preparing our students to function in tomorrow's world. In this regard, this keynote postulates the need for educators to rethink their conceptions of teaching and redesign their students' learning experiences so that they meet the needs of Education 4.0.



Dr. Ibrahima Faye

Associate Professor,
Head of the Intelligent Medical Imaging
research group,
Universiti Teknologi PETRONAS.

Talk Title: Pattern Recognition in Intelligent Systems

Pattern Recognition has been playing a fundamental role in many intelligent systems. For most cases, the primary stage consists in differentiating various possible patterns of an input data. The efficacy of this primary stage highly impacts the final intelligent system. The talk will discuss the implementation of pattern recognition techniques in intelligent systems from very different contexts. In industrial applications, examples will be given in the development of automatic product defect detection in an inspection line. In biomedical applications, examples will be given in the construction of computer aided diagnosis systems for various disease as well as in automatic classification of proteins into protein families. In psychology, examples will be given in the construction of emotion recognition systems. With the recent advances in deep learning techniques, new perspectives appear in the development of intelligent systems. The talk will discuss some of the recent applications of deep learning techniques along with the perspectives and challenges.



Dr. Tahir Riaz

Data Architect,
Sleeknote ApS, Denmark.

Talk Title: Big Data Analytics – Knowing the Knowns and Unknowns

The talk will look at big data analytics from a certain angle; “knowing the knowns and unknowns”. Big data analytics is one the most impacting areas of information technology today, and it is expected that the trend will further accelerate. The talk will sail through the evolution of big data analytics in industry and academia. The questions such as what is the current state, and what are the future trends in big data analytics will be answered. The talk will also dig into at what are the important areas where big data analytics will be impacting more.



Dr. Syed Irfan Hyder

Dean CBM and CES,
Institute of Business Management,
Karachi, Pakistan.

Talk Title: AI vs. Data Sciences: Parallel with Chomsky's Cognitive Psychology vs. Skinner's Behavioral Psychology

AI is facing the same challenge today from data sciences that was faced by Chomsky's Cognitive Psychology when it confronted Skinner's Behavioral Psychology in early 1950s. The basic issue is whether "intelligence" can simply be understood by observing the input-output relations over a black-box representation of the mind? Is the success of Google data science in predicting outputs usefully from deep statistical analysis of big-data of billions of similar input-output relations a sign of artificial intelligence? Does accuracy of proving its machine generated conjectures through big data analytics can actually replace the need of humans to do science, i.e. to develop hypothesis, design experiments, observe results and develop theories? This talk focuses on some of the questions raised by Chomsky about the recent advancements in AI and draws parallel with clash of Cognitive Psychology with the Behavioral Psychology in the 1950. This talk would illustrate through this parallel the need for AI to understand and develop the internal representations of how human intelligence work.



Dr. B. S. Chowdhry

Distinguished National Professor, DEAN,
Faculty of Electrical, Electronics, &
Computer Engineering,
Mehran University of Engineering &
Technology, Jamshoro - Pakistan.

Talk Title: Cooperative Learning and Partnership Building: Empowering our ICT Graduates and Faculty to Compete in the New World Economy.

In the present time, universities, education regulators and teachers are involved in much discussion on how to best prepare engineers for future jobs in the industry. In this regard, questions such as “Should industry standards be taught as a discipline for its own sake or for the body of knowledge, skills and values to be derived from it (or both)?” and “Are projects executed during study as part of curriculum sufficiently providing the students exposure required to deliver on real-world job projects?” remain central issues in shaping the approach of teachers and policy makers alike.

To address these questions, approaches such as Cooperative Learning, may provide opportunities for promotion and adoption of best practices, developing linkages with industry, stimulation of innovation and diversity in engineering education in keeping the pace with changing scenario of world. The idea of Co-operative learning is to intertwine academic and practical training in architecture that puts equal emphasis on theoretical knowledge as well as skills required for practical jobs. By introducing mandatory placements in companies and merging them in to study cycle of a degree course, future graduates could be better prepared for jobs nationally and internationally respectively.

The presentation will also focus on how to become partner in Horizon 2020 which is the biggest EU Research and Innovation program ever with nearly €80 billion of funding available over 7 years (2014 to 2020) – in addition to the private investment that this money will attract. It promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market.



Dr. Hasina Khatoun

Director,
National University of Computer and
Emerging Sciences.

Talk Title: Challenges faced by Future Computing Technologies: An architecture and Operating System Perspective

The changing face of technology and the growing application demands have given rise to a number of debates. One such debate is centered around the growing performance requirements of present and future applications and the current trends in hardware and software performance improvements to deal with these requirements. A paradigm shift is required in high performance computing architectures and their corresponding operating system features to tackle the needs of future applications. New technological innovations are required due to the expected closure of Moore's Law and other scaling technologies. The talk will give an overview of various initiatives that have been taken in recent times to counter these issues. The innovations and emerging solutions proposed to meet the above-mentioned challenges shall also be discussed. The maturing of quantum computing and its implications on conventional computing paradigms shall be explored.

Technical Sessions Details

DAY 01	
Technical Session I – Session Chair (Dr. Mohamed Amin Embi)	
Session Co Chair (Dr. Ayaz Khan)	
E-Learning 2.0 Model for Pakistani Universities Muhammad Hassan Altaf Abdul Rehman Yasir Asif Muhammad	02:00 pm
IoT: Protocols, challenges, and opportunities with agriculture perspective Muhammad Azeem Abbas Sharifullah Khan Mushhad Gillani Yaser Hafeez	02:25 pm
Optimizing Energy Consumption using Fuzzy Logic for HEMS in a Smart Grid Qurat-ul-Ain Sohail Iqbal Nadeem Javaid	02:50 pm
A Survey: Software Defined Network in Vehicular Ad-hoc Network: Research Challenges and Future Directions Saher Ather	03:15 pm
Achieving Maturity in Software Costing and Estimation Ayub Latif Kashif Bashir Yaseen Khan	03:40 pm
Transfer Learning Techniques for Image Classification: A Literature Review Aleenah Khan Tariq Mahmood Saima Tajjudin	04:05 pm

DAY 01	
Technical Session II – Session Chair (Dr. Ibrahima Faye)	
Session Co Chair (Dr. Taha Jilani)	
Performance Evaluation of Unmanned Aerial Vehicles for video based Surveillance Applications Muhammad Naveed Sameer Qazi	02:00 pm
Performance analysis of classical and modern ciphers on Android Engr. Abdul Rahman Mahmood Syed Muzammil Ahmed	02:25 pm
A Survey: Caching in NDN/CCN based Wireless MANETs, VANETs, Mesh and Sensor Networks Saba Ghani	02:50 pm
Big Data Influence in Financial Strategy Muhammad Ashraf Rehman Dr. Amjad Farooq	03:15 pm
Fault Prediction in Self-Healing Telecommunication Systems Ahmad S. Kazmi	03:40 pm
Achieving High Availability in Cloud through Live Migration Abdul Wahab Khan Sheikh Adnan Ahmed Usmani	04:05 pm

DAY 02	
Technical Session III – Session Chair (Dr. Bhawani Shankar)	
Session Co Chair (Dr. Maaz Bin Ahmed)	
A Study of IPv6 Anycast Challenges, Communication Techniques and Application Fahad Samad Engr. Abdul Rahman Zulfiqar A. Memon Abdul Aziz Soniya Rudani	10:15 am
Optical Character Recognition Engine to extract Food-items and Prices from Grocery Receipt Images via Templating and Dictionary Traversal Technique Rafi Ullah Ali Sohani Faraz Ali Athaul Rai	10:40 am
Mining Diagnostic Investigation Process Sohail Imran Dr. Tariq Mahmood	11:05 am
Ontology Based System for Expert Searching in Academia using SWRL and SPARQL Furqan Hussain Essani Quratulain Rajput	11:30 am
IoT Startups in Pakistan: Can the Traditional Software Development Practices Work? Faiza Khan Muhammad Khalid Khan	11:55 am
ERP Implementation in Pakistan: Comparison of Different Business Sectors Kumail Abbas Amir Ali Abdul Azeem	12:20 am

DAY 02	
Technical Session IV – Session Chair (Dr. Tahir Riaz)	
Session Co Chair (Dr. Kamran Nishat)	
Heart Diseases Prediction using Data Mining and its Techniques - A Survey Muhammad Fahad Sadiq Ur Rehman Aqeel-ur-Rehman Muhammad Kashif Alam	10:15 am
Detection of Myocardial Infarction in ECG Base Leads using Deep Convolutional Neural Networks Awais M. Lodhi Adnan N. Qureshi Usman Sharif Zahid Ashiq	10:40 am
A Comparative Study of Machine Learning Algorithms for Classification of Perfume Odours Rahima Saleem	11:05 am
A Study of SAR Despeckling Methods Muhammad Haris Mahmood Ashraf Faraz Ahsan Ahmed Athar Memoona Malik	11:30 am
To Perform A Comparative Study of Machine Learning Algorithms for the Diagnoses of Heart Diseases Fatima Azhar Sehar Munir Tooba Riaz	11:55 am
The Role of SEO Techniques to Enhanced Performance and Improved Ranking for Intelli-Web Shop Muhammad Noman khalid Hira Beenish Kamran Rasheed Muhammad Iqbal Muhammad Talha	12:20 am



Technical Session I

List of Abstracts



E-Learning 2.0 Model for Pakistani Universities

Muhammad Hassan Altaf
muhammadhassanaltaf@gmail.com

AbdulRehman Yasir
abdulrehman.yasir@gmail.com

Asif Muhammad
masifqadri@hotmail.com

COMSATS Institute of Information Technology, Islamabad, Pakistan

Abstract: E-Learning is a new concept in Pakistan. Only few universities are using E-Learning techniques. Open University and Virtual University have developed their distance learning models according to their requirements. These models follow the Hierarchical Way of Learning. These models are less collaborative and course contents are university and instructor dependent. E-learning 2.0 is based on the social web and can remove the drawbacks of these models. Unfortunately, there is no e-learning 2.0 model for Pakistani universities. In this paper, we propose an e-learning 2.0 model for our universities. This model follows the Collaborative Way of Learning, and it blends the important components of E-learning 1.0 and E-learning 2.0 according to the Pakistani Education System.

Keywords: E-Learning, E-Learning 2.0, Web1.0, Web 2.0, Web 3.0, Social Web, Semantic Web



IoT: Protocols, Challenges, and Opportunities with Agriculture Perspective

Muhammad Azeem Abbas
azeem.abbas@uair.edu.pk

Mushhad Gillani
mushhad@uair.edu.pk

Yaser Hafeez
yasir@uair.edu.pk

University Institute of Information Technology (UIIT), PMAS-Arid Agriculture University,
Rawalpindi, Pakistan

Sharifullah Khan
sharifullah.khan@seecs.edu.pk

School of Electrical Engineering and Computer Science (SEecs), National University of
Sciences and Technology (NUST), Islamabad, Pakistan

Abstract:- The rustic regions in Pakistan face numerous and similar concerns in the fields of agriculture, connectivity, water, transport and others. The present work provides a roadmap to solve these issues potentially and paves a way for similar results to be focused and headed for explaining these concerns. In this regard, an extensive variety of industrial IoT applications specific to agriculture is evaluated and presented in this work. This study analyses the contemporary enquiries of IoT, significant and supporting technologies, key IoT protocols in agriculture and classifies research tendencies and experiments in Pakistan. A simulation of the state of the art IoT protocols was conducted for their evaluation.

Keywords: IoT, Agriculture, Protocols, Pakistan.

Optimizing Energy Consumption using Fuzzy Logic for HEMS in a Smart Grid

Sohail Iqbal

sohail.iqbal@seecs.nust.edu.pk

Qurat-ul-Ain

School of Electrical Engineering and Computer Science (SEECS),
National University of Sciences and Technology (NUST), Islamabad, Pakistan

Nadeem Javaid

COMSATS Institute of Information Technology, Islamabad, Pakistan

Abstract: Energy consumption minimization and user comfort enhancement in Home Energy Management System (HEMS) are the major challenges in a smart grid. In HEMS, HVAC has a large impact on the energy consumption. For user comfort, one needs to take into account different environmental factors among which humidity plays an important role in determining the suitable temperature for optimal user comfort. In order to minimize energy consumption without compromising user comfort, fuzzy logic techniques are widely used without considering humidity. In this paper, we tune the Fuzzy Inference System (FIS) by including humidity as well as we propose a method for the automatic rule generation for FIS. Automatic rule generation is devised using combinatorics. The proposed system is evaluated by the membership functions of the input parameters and the results are compared with Mamdani FIS and Sugeno FIS. Indoor temperature, outdoor temperature, occupancy, price, initialized set points of thermostat, and humidity are the input parameters of the system. Performance metrics used for the evaluation are energy consumption, Peak-to-Average Ratio (PAR), cost, and efficiency gain. Simulation of one month energy consumption with proposed technique is performed in Matlab®. Simulation results validate the proposed technique and show that despite all the energy savings, the proposed technique manages to be in the user comfort zone while achieving electricity cost reduction up to 24%. Moreover, optimization using FIS provides the reduced energy consumption up to 28%. The proposed technique seems to have a potential for improved demand-side energy management in a smart grid.

Keywords: Smart Grid, Fuzzy Logic, Energy Management, User Comfort

A Survey: Software Defined Network in Vehicular Ad-hoc Network: Research Challenges and Future Directions

Saher Ather

ather.saher@gmail.com

Department of Computer Science, FAST- NUCES, Karachi, Pakistan

Abstract: Software Defined Networking (SDN) is one of the major technologies which promotes the development of next generation network. Vehicular Ad-hoc Network has been an attracted topic for the researchers in recent years. VANETs is becoming prominent network technology to which researchers are expecting to be cost effective and malleable and ideal for providing facility of network connection to drivers. VANETs and SDN when integrated bring a ground-breaking innovation in networks. The conventional VANET is now converting into internet of vehicle (IoV) by which the interaction between vehicles, roads and cities is being made possible using mobile communication technology and vehicle navigation system. The major challenges which affect the quality of service are portability of nodes, limitation of bandwidth, links interruption and denial of service. unauthorized access, computational overhead for cryptography, confidentiality, user privacy, unauthenticated applications, data leakage, security of virtual machines, data modification and configuration issues. Greedy detection for VANETs (GDVAN) was the technique for greedy behavior attacks in VANETs which helped in detecting denial of service attack. Apart from security issue, VANET has a challenge of data dissemination. SDN in VANETs has opened the door of new research technology by replacing traditional IP networks. SdnMAC was an architecture based on SDN. An intelligent transport system (ITS) was being achieved in near future via VANETs. The new technologies of mobile network system include 5G which is going to contribute in the communication of vehicular networks. In future the dependence of unnamed aerial networks (UAV) has some unique characteristics from VANETs. Energy supply to UAV is an important research area. The algorithms for data dissemination requires the efficient switching selection, the future extension to these algorithms are under consideration. A new architecture of VANET is the combination of two emerging technologies SDN with fog computing. SDN is flexible, scalable and programmable whereas fog computing is the demand of future. There are so many directions related to FSDN, one of which is the compatibility of SDN and fog during resource management. So there are several issues which open the direction of future research work in VANETs with SDN to facilitate the users.

Keywords: Fog, Internet of Vehicle, OpenFlow, RSU, SDN, Software Defined networking, SDN security, VANETs, 5G.

Transfer Learning Techniques for Image Classification: A Literature Review

Aleenah Khan

aleenahkhan@iba.edu.pk

Tariq Mahmood

tmahmood@iba.edu.pk

Saima Tajjudin

stajuddin@iba.edu.pk

Faculty of Computer Science, Institute of Business Administration, Karachi, Pakistan

Abstract: The field of deep learning has solved many critical problems in image recognition and classification. Besides convolution neural networks, much support has come from transfer learning technology which involves using information and knowledge gained from one deep learning task and applying it to another one. This technology is quite recent but its applications are increasing at a rapid pace, hence requiring a thorough analysis. In this paper, we conduct the first systematic literature review on the application of transfer learning to image recognition and classification. Our review focuses on the time period 2013 - 2017 and results are analyzed with respect to the dataset type, pooling options, activation functions and the applied algorithm. We also summarize results in a concrete typology.

Keywords: Transfer Learning, Image Recognition, Image, Classification, Systematic Literature Review, Convolution Neural, Networks



Achieving Maturity in Software Costing and Estimation

Mohammad Ayub Latif
malatif@pafkiet.edu.pk

Kashif Bashir
kashif@pafkiet.edu.pk

CoCIS, Karachi Institute of Economics and Technology, Karachi, Pakistan

Muhammad Yaseen Khan
yaseen.khan@jinnah.edu.pk
Department of Computer Sciences, Mohammad Ali Jinnah University, Karachi, Pakistan

Abstract: Predictability is the foremost choice of all stakeholders in software development, be it custom software or a general solution. Many software costing models have been proposed and used in the software industry over the last 40 years. In this paper, we go down into the details of recent approaches in software estimation and along with that, we propose the mandatory steps which can lead towards accuracy in software cost estimation. The more mature an organization is in costing and estimation, the more accurate results it is expected to achieve. We believe that using the steps defined in this paper will lead us to more accurate results in costing and estimation. Unlike the Capability Maturity Model (CMM), we don't propose any specific levels and designate key process areas to it; but specific list of procedures towards an accurate costing and estimation of software is clearly identified in this paper

Keywords: software development, software costing, costs, estimation, software estimation techniques, project management.



Technical Session II

List of Abstracts



Performance Evaluation of Unmanned Aerial Vehicles for video based Surveillance Applications

Muhammad Naveed

naveed@pafkiet.edu.pk

CoCIS, Karachi Institute of Economics and Technology, Karachi, Pakistan

Sameer Qazi

sameer.qazi@pafkiet.edu.pk

CoE, Karachi Institute of Economics and Technology, Karachi, Pakistan

Abstract: It is always beneficial to look for the latest technology introduced so far to ensure proper surveillance. In recent times, unmanned aerial vehicles (UAVs) representing a new potential market have appealed a lot of attention. UAVs serve a lot for law enforcement agencies for constant video surveillance at remote locations in rural areas where otherwise lot of resources are required. Airborne monitoring through camera mounted UAVs assists to capture the real time streaming video from different vantage points to a single command and control center. We suggest an UAV based framework that would lead to timely action in crime or disaster prevention. In this paper, we analyzed the throughput of Indoor UEs and outdoor UEs of such a video streaming system using model of wireless propagation, multipath propagation loss, shadowing and fading.



Performance Analysis of Classical and Modern Ciphers on Android

Engr. Abdul-Rahman Mahmood

armahmood786@yahoo.com

Department of Computer Science, FAST- NUCES, Karachi, Pakistan

Syed Muzammil Ahmed

muzamilahm@hotmail.com

Department of Computer Science, Usman Institute of Technology, Karachi, Pakistan

Abstract: Cryptography is about constructing and analysing protocols that overcome the influence of opponents and which are related to various aspects in information security such as data confidentiality, data integrity, and authentication. The classical cryptography usually performs the encoding or transformation of the plaintext while the modern cryptography involves a strongly mathematical and computation intensive approach making such algorithms hard to break by an opponent. The aim of this research paper is to analyze the performance of various classical and modern ciphers on Android platform. Classical ciphers include Caesar cipher, substitution cipher, transposition cipher, and Vigenère cipher. Modern cryptographic algorithms include DES, and AES. Overhead is also computed for different key lengths on variants of android versions and processors. This research is an effort that explains using both classical and modern ciphers on a mobile platform and provides comparisons of various cryptographic security schemes

Keywords: - Classical Cryptography, Encryption, Caesar cipher.

A Survey: Caching in NDN/CCN based Wireless MANETs, VANETs, Mesh and Sensor Networks

Saba Ghani

Saba.ghani2012@hotmail.com

Department of Computer Science, FAST- NUCES, Karachi, Pakistan

Abstract: Fundamental internet pattern has been shifted from host-to-host discussion model to Content Centric communication model. Caching techniques are considered as backbone for these networks. In recent times, smartphones, mini computers, and tablets empowered with wireless internet connectivity are becoming the most common source of content sharing. Named Data Networking (NDN) recently has been recommended as a solution to deliver content at large scale instead of the traditional host centric networking. In NDN, nodes have the capability to cache content, so the requester is always provided with nearest cached copy of the data. NDN is said to be more suitable for wireless networks because the major problems of IP based networks are eliminated by this pattern. But caching schemes for wireless NDN have more constraints due to the inherent properties of wireless networks such as processing power, device energy and node mobility. NDN is considered as enabling owner of Internet of Things (IoT) due to its innovative features like name based routing and in-network caching. This vision ranges from tiny devices to powerful sensors, actuators, mobile ad-hoc networks and networks of multiple's combinations. By merging cache in NDN for Mobile Ad-hoc Networks (MANETs), Vehicular Ad-hoc Networks (VANETs), Mesh and Sensor Networks performance within networks can be improved. Compared with traditional caching in networks, caching in NDN/CCN (ICN) has several new features i.e. transparency to application of sensors and mesh networks, ubiquitous cache, content for caching is more grained. In this paper we describe multiple caching strategies proposed for Wireless NDN used in MANETs, VANETs, Mesh and Sensor networks to present a comprehensive analysis of different existing techniques. Important dimensions of caching problem are cache placement algorithms and cache replacement algorithms, both are explained in this paper.

Keywords: Named Data Networking (NDN), Content Centric, Networking (CCN), in-Network caching, Wireless networks.

Big Data Influence in Financial Strategy

Muhammad Ashraf Rehman

ashraf.2k12@gmail.com

Department of Computer Science, Superior University, Lahore, Pakistan

Dr. Amjad Farooq

amjadfarooq@uet.edu.pk

Department of Engineering and Computer Science, University of Engineering and Technology, Lahore, Pakistan

Abstract: For the development of organizational strategy and spearhead its growth, organizations have to work on different areas of strategy. One of the central areas is a financial strategy. The era of financial management is not infantile but coincidentally the economic environment in which business work, is going to change its boundaries and domain. Financial analysis plays with data, comparison, forecasting, evaluation and check performance, which is not possible without Latest Technology and Big Data analysis. We can claim that use of big data, financial management software and technology can perform better financial management and can make appropriate financial strategy, through which organization can compete with their rivals on the basis of throughput time. Big data provides variety of data with intense volume. Big data also deal with different dimension of evaluation of data, which is core activity of financial management and financial strategy. In all about results of big data are very positive towards organizational success

Keywords: Business Strategy, Financial Strategy, Financial Management, Big Data, Cloud Computing.

Fault Prediction in Self-Healing Telecommunication Systems

Ahmad S. Kazmi

ahmad.kazmi@ucp.edu.pk

Department of Computer Science, University of Central Punjab, Lahore, Pakistan

Abstract: Telecommunication systems are heterogeneous networks with parts supplied by many vendors. Such complex systems face a number of faults that may deny services to the end users resulting in revenue losses to the telecommunication companies. Best case scenario is to avoid these faults completely, or failing that, correct the faults as soon as possible. Therefore there is a need for self-healing networks that can proactively predict and correct faults automatically. In this paper a fault prediction technique is presented, which is useful in a self-healing network. The proposed technique first trains an Artificial Intelligence Technique on the historical alarm data to find correlations and then use these correlation to predict future alarms. The Artificial Intelligence Technique used are Artificial Neural Network, Support Vector Machine, Kalman Filter and Hidden Markov Model. In this paper we are reporting on Artificial Neural Network. The proposed technique is applied on the alarm data from a real telecommunication company and prediction accuracies of the proposed technique are calculated. The details of the proposed fault prediction technique and results that suggest optimal parameters are presented. The proposed technique is effective in a proactive self-healing network.

Keywords: Self-healing Networks; Alarm; Faults; Neural Networks; Telecommunication system



Achieving High Availability in Cloud through Live Migration

Abdul Wahab Khan

Abdul.khan@pafkiet.edu.pk

CoCIS, Karachi Institute of Economics and Technology, Karachi, Pakistan

Sheikh Adnan Ahmed Usmani

adnan@szic.edu.pk

Department of SZIC, University of Karachi, Karachi, Pakistan

Abstract: Increasing rely on the cloud for deployment and assessing critical applications and services for businesses makes its high availability as an extremely critical aspect. The paper evaluates virtualization based systems and techniques for the betterment of overall resilience of a cloud environment. We have highlighted systems to perform monitoring, load balancing, and dynamic allocation of resources, replication and live migration at backup sites, and a number of pioneering approaches such as ghost VMs and Byzantine fault tolerance to ensure high availability. Moreover, hurdles and bottle necks for the effectiveness and application of these systems are also identified. A real-world implementation of live migration is also presented with a concise discussion of the challenges faced during the setup and configuration phases.

Keyword: High Availability, Virtualization, Cloud Computing, Live Migration, Load Balancing



Technical Session III

List of Abstracts

A Study of IPV6 Anycast Challenges, Communication Techniques and Application

Fahad Samad

fahad.samad@nu.edu.pk

Engr. Abdul Rahman

abdulrahman@nu.edu.pk

Zulfiqar A. Memon

zulfiqar.memon@nu.edu.pk

Abdul Aziz

Abdulaziz@nu.edu.pk

Soniya Rudani

Department of Computer Science, FAST- NUCES, Karachi, Pakistan

Abstract: IPV6 is an emerging phenomenon that is being added in IOT and everything that requires IP. This is because of the lack of address space issue faced by the use of IPV4. IPV6 is much different than IPV4. One aspect of the difference is address space. IPV6 offers an additional addressing technique i.e. Anycast. Anycast is one to many techniques that offers a large number of advantages to the internet, despite of this there are a lot of challenges as there are no standards for communication. Although it is widely being used in internet applications but is still lacking a standard communication protocol. The purpose of this paper is to study the researches of IPV6 anycast challenges, advantages and majorly communication techniques proposed by other researches.

Keywords: IPV6, Anycast addressing, Anycast communication, Applications, Routing.

Optical Character Recognition Engine to extract Food-items and Prices from Grocery Receipt Images via Templating and Dictionary-Traversal Technique

Rafi Ullah

rafiullah.khan@cubixlabs.com
Data Scientist at Cubix Labs Pakistan

Ali Sohani

ali.sohani@cubix.co
Chief Data Scientist and Chief Technical
Officer at Cubix Labs Pakistan

Faraz Ali

faraz.ali@cubixlabs.com
Data Scientist at Cubix Labs Pakistan

Athaul Rai

athaul.raai@cubixlabs.com
Junior Data Scientist at Cubix Labs Pakistan

Abstract: This paper proposes a mix of some old and few novel techniques to nail down the fundamental problem of Food-Items and Prices recognition and eventual extraction of them from the Grocery Receipts. Considering in our research we didn't find any existing OCR engine that is up to that standard let alone specialized for this specific purpose. Since the target was to create a specialized OCR system, we began with an idea of creating the wrappers around basic OCR system to empower it with context of Grocery Receipt. For this, we've built pre-function and post-function wrappers over existing system called Tesseract (an open source OCR engine by Google). Our system follows specific work-flow to enhance basic OCR output. First it runs the provided image to image filters to make it most suitable for Section-level extraction. Our system then bifurcates the image into sections (like Price, Item-Names, Quantity are dealt separately from one another) according to given template layouts (created from the template engine). Specific portion of images (sections) are then forwarded to Tesseract engine for basic OCR. Then text-extracted is forwarded to a contextual pattern matcher, to make sense of the text-extracted in a contextual manner. We tested the system on many of the Receipts that belonged to particular grocery stores whose templates were created via our template-engine. We successfully conclude that our techniques significantly improve on both the accuracy of overall context based text recognition and close-match detection when compared to an unassisted/ vanilla Tesseract OCR engine. Eventual idea is to create OCR-Engine specifically trained and built for Grocery Receipt Recognition, which in bigger picture will empower Food-Kitchen Assistance Mobile Apps in the market. As when Users won't require to enter what's in their pantry, system can help them to tell what arrived when and what would be required in their next shopping visit.

Keyword: Accurate image to text converter, Receipt parsing using template matching, OCR using receipts template, Text retrieval from receipts images.

Mining Diagnostic Investigation Process

Sohail Imran

sohail@pafkiet.edu.pk

CoCIS, Karachi Institute of Economics and Technology, Karachi, Pakistan

Dr. Tariq Mahmood

tmahmood@iba.edu.pk

Faculty of Computer Science, Institute of Business Administration, Karachi, Pakistan

Abstract: Diagnostic investigation process of healthcare is complex, medical practitioners' goal is to find methods of standardizing their diagnostic investigation processes to reduce the time and cost and optimize the quality of healthcare. The technique that can be applied to mine valuable and useful knowledge of diagnostic investigation process of their interest from stored data is process mining. Process does not consider dynamic and causal dependencies in processes. This characteristic of process mining can be effectively applied in diagnostic investigation. This technique becomes more helpful and valuable where some treatments fail to provide favoring evidence. We used process mining in this paper to mine efficient diagnostic investigation process flow for hepatitis patients. There are several advantages of using process mining approach which can boost the effectiveness diagnostic investigation processes.

Keywords: Process mining, healthcare, diagnostic investigation process, process flow.

Ontology Based System for Expert Searching in Academia using SWRL and SPARQL

Furqan Hussain Essani
fessani@iba.edu.pk

Quratulain Rajput
qrajput@iba.edu.pk

Faculty of Computer Science, Institute of Business Administration, Karachi, Pakistan

Abstract: Searching an expert with relevant experience and expertise is an important and a challenging task in academics. A lot of work has been carried out in this regard; however the semantic web technologies for modeling the information to search an expert are not being explored extensively. This paper proposed an ontology based system to search an academic expert of a particular field of study. The system comprised of the ontology which consists of an academic contribution of an individual. Additionally, SWRL (Semantic Web Rule Language) rules were created based on the academic contribution as publications made by an individual to infer their field of expertise. Finally, the SPARQL queries were performed to search an expert. This research developed a tool to experiment the proposed system and used IEEE Explore Digital Library to retrieve academic contribution of an individual. The ontology based system of an expert searching is found an efficient in terms of reducing the data modeling cost and making the system easily extendable and reusable for other applications.

Keywords: Expert searching, Ontology, SPARQL, SWRL.



IoT Startups in Pakistan: Can the Traditional Software Development Practices Work?

Faiza Khan

faizakhan358@yahoo.com

Muhammad Khalid Khan

khalid.khan@pafkiet.edu.pk

CoCIS, Karachi Institute of Economics and Technology, Karachi, Pakistan

Abstract: Internet of Things is a term coined by Kevin Ashton. Internet of Things (IoT) is a system of interconnected computing devices, machines, objects, people, places or animals that are labelled or tagged with distinct identifiers and has the capability of transferring data over a network with no human-to-computer or human-to-human interaction. The promise of IoT is to deliver an improved and smart lifestyle for people via ubiquitous connectivity as well as monitoring the environment, people and devices in a quantified manner. This triggers the need for compatible hardware and software applications and platform. When it comes to software development in Internet of Things (IoT) it is quite difficult because it involves dealing with heterogeneity in physical and cyber worlds. Moreover, development requires diverse skill and understanding from various parameters like programming, architecture, domain and analysis. One of the major concerns is how to use or utilize established software development practices for IoT. This research is about the current software development practices in relation to IoT being followed internationally, and how it differs from the locally followed practices. A survey using convenient sampling has been conducted for the same. Our evaluation based on the samples is, that traditional practices can be applied/are being applied for IoT software development.



ERP Implementation in Pakistan: Comparison of Different Business Sectors

Kumail Abbas

Kumail.abbass@midassafety.com

Amir Ali

Abdul Azeem

Midas safety, Dr. Muhammad Hussain Road, Karachi, Pakistan

Abstract:-Enterprise Resource Planning [ERP] systems have revolutionized the working of many organizations across the globe. A successful ERP implementation streamlines the business processes and improves the organization's culture that results in better profitability. In Pakistan, ERP implementations have seen highs and lows in term of success. A successful ERP implementation requires careful selection of the ERP vendor as various ERPs have strength in different business sectors. In this paper, a business sector wise comparison of successful ERP implementations is presented. The paper has analyzed which ERP is best suited for which business sector by conducting a survey of many companies who have implemented ERP in Pakistan.



Technical Session IV

List of Abstracts

Heart Diseases Prediction using Data Mining and its Techniques- A Survey

Muhammad Fahad
mfahad@hamdard.edu.pk

Sadiq Ur Rehman
sadiqsr@gmail.com

Aqeel-ur-Rehman
aqeel.rehman@hamdard.edu

Muhammad Kashif Alam
kashif.alam@hamdard.edu.pk

Faculty of Engineering Science and Technology, Hamdard University, Karachi, Pakistan

Abstract: A technique which is applied on different areas to predict and analyze result on the basis of sample data is known as Data mining. Areas including business, retail system, medical, sciences, engineering are indicating the worth of data mining. In this paper we are going to analyze and predict heart diseases using different algorithm/technique. To explore areas of data mining in health care is the key objective of this research. Medical industry is capable of producing data of different type i.e. non-real time or real-time and the amount of such data keeps increasing day by day. Due to the daily increment of medical data, medical industry is capable of providing huge contribution in the area of data mining which as a result gives prediction of diseases and provide quality of services to the patient. Previous researches show that prediction performance of neural network is 100% while decision tree accuracy is 99.60% and Navie Bayes accuracy is 90.74%. This paper shows the combination and analysis of neural network and data mining, Fuzzy and genetic algorithm, data mining and machine learning.

Keywords: Data mining, Data analysis, Naïve Bayes, Heart disease, Data mining algorithms, Neural Networks, Decision Tree, Fuzzy- Logic, Machine Learning, Data mining.



Detection of Myocardial Infarction in ECG Base Leads using Deep Convolutional Neural Networks

Awais M. Lodhi

awais.lodhi@ucp.edu.pk

Adnan N. Qureshi

dr.qureshi@ucp.edu.pk

Zahid Ashiq

zahidashiq@ucp.edu.pk

Faculty of Information Technology, University of Central Punjab, Lahore, Pakistan

Usman Sharif

usman.sharif@pucit.edu.pk

College of Information Technology, Punjab University, Lahore, Pakistan

Abstract: Myocardial infarction (MI), commonly known as a heart attack, occurs when blood flow decreases or stops to a part of the heart, causing irreversible damage to the heart muscle. It is a leading cause of mortality around the world according to the WHO reports and, therefore, it is critical to estimate the location and extent of the damaged tissue. Similarly, localization of MI is also significantly important to correctly manage the patient medically and/or surgically. In this paper we propose and implement a system in which the signals from 6 leads (I, II, III, aVR, aVL, aVF) of the ECG are used to detect the cases with MI in the lateral and Inferior walls of the heart. The use of Convolutional Neural Networks (CNN) and a novel voting scheme provides acceptably accurate estimates of MI. The proposed algorithm has been validated on MI and Normal Healthy Controls from the PhysioNet dataset. This approach is robust and can be used in the clinical and research settings.

Keywords: Machine Learning, BioMedical Signal Processing, Artificial Intelligence, ECG

A Comparative Study of Machine Learning Algorithms for Classification of Perfume Odours

Rahima Saleem

rahimasaleem.rs@gmail.com

Department of Computer Science, Lahore College for Women University, Lahore, Pakistan

Abstract: Data mining is the useful tool to discover the knowledge from large data. Different methods & algorithms are available in data mining. Categorization is one of the most active research and application areas of Data Mining. There are dozens of categorization models ranging from Decision Tree models, Neural Networks models or ANN, probabilistic models (e.g. Naive Bayes), Regression-Based models, kernel models (SVM) to combinatorial models (Ant colony optimization) etc. But in many practical pattern classification and recognition systems, the problem is that the performance of a single classifier may not be satisfactory. For this purpose, the data of fifteen different perfumes was obtained. The objective of this paper is to discuss different classification models and implement them on odour samples to analyse how accurately they classify each of them into their related classes. At the end, a comparison among the models is performed.

Keywords: Machine Learning, Data Mining, Odour Classification, Classification Algorithms, Odour Sensing, OMX-GR sensor, Electronic Nose.

A Study of SAR Despeckling Methods

Muhammad Haris

m.haris@comsats.edu.pk

Memoona Malik

moonamalik@comsats.edu.pk

Ahmed Akhter

Department of Computer Science, COMSATS Institute of Science & Technology,
Islamabad, Pakistan

Mahmood Ashraf

mahmood313@gmail.com

Department of Computer Science, Federal Urdu University of Arts, Sciences & Technology,
Islamabad, Pakistan

Faraz Ahsan

faraz.ahsan@hitecuni.edu.pk

Department Of Computer Science And Engineering, HITEC University Taxila,
Taxila, Pakistan

Abstract: Remote Sensing is the process to acquire information about phenomena or an object without physical contact with the subject under consideration in contrast to on site observation. The applications of remote sensing vary from Geography to land surveying and many more. In past optical sensors were used for remote sensing that uses the reflected sun rays for object identification. The optical sensors being usable in day light make it inefficient for limited time availability and due to shorter wavelength of visible light it can only detect the on-surface objects and thus cannot penetrate the earth's surface and is affected by atmospheric factors as well. The optical sensors have been replaced with radar based remote sensing for overcoming the shortcomings of optical sensors. Now the images acquired by receiving the transmitted signals in radar sensors encounter speckle noise phenomena which is a granular noise that exists inherently in SAR images due to interference of received signals either constructive or destructive addition of received signals that degrades the image quality and thus does not give accurate information. To denoise the images several techniques have been proposed and applied which includes local Filters, non-local filters and transforms. Each technique has its merits and demerits. Recently focus has been shifted towards the combined solution of non-local filters and transforms. The motivation of this study is to study the existing hybrid solution and work towards new venues in hybrid techniques to reduce information loss and produce better results.

Keywords: SAR, Optical Sensors, Radars, Speckle, Local Filters, Non-Local Filters, Transforms.

A Comparative Study of Machine Learning Algorithms for the Diagnosis of Heart Diseases

Fatima Azhar

fatima.azhar551@gmail.com

Sehar Munir

seharsheikh75@gmail.com

Tooba Riaz

tooba.riaz111@gmail.com

Department of Computer Science, Lahore College for Women University, Lahore, Pakistan

Abstract: Heart failure is a serious disorder with high pervasiveness. About 3–5% of hospital admissions are connected with heart failure incidents. The diagnosis of heart sickness is a substantial and tedious task in medicine. The medicine and healthcare industry gathers enormous amounts of heart disease data to predict heart attacks that unfortunately, are not “mined” properly to extract hidden information for effective decision making. This inadequacy is handled in this research by use of classification models i.e. supervised data mining algorithms, which can implicitly perceive complex nonlinear associations between dependent and independent variables. This paper also determines which model gives the highest percentage of correct predictions for the diagnoses. Weka tool is used to classify the data. Data is evaluated using 5-fold cross validation and by dividing dataset into testing and training sets. Results are compared on basis of accuracy, mean absolute error, relative absolute error and time taken to build the algorithm.

Keywords – Heart Disease, machine learning, Data mining, Classification

The Role of SEO Techniques to Enhanced Performance and Improved Ranking for Intelli-Web Shop

Muhammad Noman Khalid
nomankhalid.bukc@pern.onmicrosoft.com

Kamran Rasheed
Muhammad Iqbal
Muhammad Talha

Department of Computer Science, Bahria University, Karachi, Pakistan

Hira Beenish
CoCIS, Karachi Institute of Economics and Technology, Karachi, Pakistan

Abstract: The use of Internet is gaining popularity because of people freedom to connect each other and ultimately shrink the physical boundaries between different societies. This virtual world has a wide-ranging impact on communication since its rise and globalization. It also brings new possibilities to individuals and companies who are mostly keeping in touch with WEB. Due to extensive use of internet; the WEB holds an immeasurable amount of data and Search Engines (SE) are essential tools for finding, sorting, storing and ranking the value of that data on the web. The potential of SEs is very significant because a major portion of web traffic is driven by SEs, such as Google, Bing, Baidu, Yahoo, etc.; and their results routes end users to specific website. Due to the vital role of SEs, search results are become more decisive for website owners to compete with other rivals. Search Engine Optimization (SEO) is a key process for getting better online visibility on search results from SEs. After employing SEO, website owners believe that their website position will appear before their rivals. Hence, there is inherent requirement for website developers to follow and apply SEO guidelines to address ranking issue. The objective of this study is to technically justify the importance of SEs and SEO. Also we have outlined factors and improvement techniques that are helpful in both perspective (Development & SE). In order to evaluate result we have designed tool that is based on SEO methods (On, Off Page) which will be helpful for website testing. Results attained from our experimental work demonstrate the significance of key SEO factors and this study concluded that that WordPress and CMS (Content Management System) platform is closer to the SE and websites that are developed through this achieve ranking easily.

Keywords: Search Engine Optimization techniques; Website Performance testing; SEO in Ecommerce sites



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