Confirmed Invited Speakers (DICE-IET 2017)

Following is the list of honourable speakers both from academia and industry who have been kind enough to accept our invitation to share their experiences, innovations, and research findings on DICE-IET'17 platform.

Name	Topic & Abstract	
Dr. Naveed Arshad Associate Professor Department Of Computer Sciences LUMS	**Title: A Look at the Possibility of 100% Electricity from Renewable Sources in Pakistan** Abstract: Energy experts from around the world have widely debated on the possibility of moving to a 100% renewable-based energy system. While experts argue on the practicality of this idea with currently available technology, almost all experts agree that slowly moving towards a complete renewable-based energy system is the right strategy for a sustainable future for this planet. Pakistan is one of ten countries that are most vulnerable to the effects of climate change. While our emissions account for less than one percent of the world, with increasing population and industrialization, they are expected to quadruple over the next decade. In this talk, we will look at the possibility of moving Pakistan to 100% renewable based electricity generation. Starting with the electricity needs of Pakistan in the near and distant future, we will look at possible generation mix of Solar, Wind, Hydro, Nuclear, Biomass/Bio-waste and Stored Hydro in the country. We will also explore the opportunities of supplementing the generation with better demand side management, soft load shedding, energy efficiency, large scale virtual energy storage, energy sharing and others to achieve the goal of using electricity with 100% renewable sources.	Academia
Dr. Bilal Wajid Assistant Professor University of Engineering and Technology, Pakistan.	**Title: Developing Diagnostic tests and Probiotic therapies** Abstract: Together with Dr. Jan Suchodolski from Gastrointestinal laboratory, Texas A&M University and Dr. Mustafa K. AlShawaqfeh from German Jordanian University (GJU) we employed qPCR assays and a mathematical algorithm to develop a dysbiosis index (DI). Fecal DNA from 95 healthy dogs and 106 dogs with histologically confirmed Chronic Inflammatory Enteropathies were analyzed. Samples were grouped into a training set and a validation set. Various mathematical models and combination of qPCR assays were evaluated to find a model with highest discriminatory power. The final qPCR panel consisted of eight bacterial groups and for a threshold of 0, the DI	Academia

	achieved 74% sensitivity and 95% specificity to separate healthy and CE dogs. Moreover, our team is geared towards developing a probiotic therapy capable of replacing artificial fecal transplant therapy for Inflammatory Bowel Disease (IBD). By using a wide population of cats and dogs (good models for human IBD) and via employing graphical models our research has shown promising results; identifying communities of microbes and metabolites needed for a cure. Moreover, this effort is directed at developing a line of health related products aiming to sustain a healthy blend of probiotics and necessary metabolites in the diet.	
Dr Amir Iqbal Bhatti Professor Capital University of Science & Technology, Pakistan.	**<u>Title: Building a World-Class Research Group in Controls & Signal Processing in Pakistan: The Story of CASPR</u>** Abstract: Controls and Signal Processing Research (CASPR) Group (caspr.com.pk) at Capital University of Science and Technology is a dynamic and vibrant research group, working in the areas of control systems, automotive systems and radar signal processing. The group originated in CASE nearly ten years ago. Though, physically the group moved to Jinnah University, but CASPR concept is not confined to a single university. The group members belong to the various institutions of the region. The synergy present in the group has given rise to a long series of international publications, PhD graduates and research projects.The talk not only covers the accomplishments of the group, it also explains in detail various research initiatives taken by CASPR. It is satisfactorily observed that the genesis and growth of CASPR is an absolutely Pakistani phenomenon, on which Pakistanican be proud of.	Academia
Prof. Dr. Abdul Jalil Professor International Islamic University, Pakistan.	**<u>Title: Visual Object Tracking</u>** Abstract: Visual Object Tracking (VOT) is an important field of computer vision. Its purpose is to find the locus of targets of interest (ToI) in the image plane. VOT has a number of applications in many fields of technology, e.g., surveillance, medical, robotics, human computer interaction, traffic control, augmented reality, multimedia, etc. With ubiquitously available camera resource, community of computer vision has been expanded and VOT challenge happens every year to test the best algorithm to cater for different issues in VOT such as occlusion, clutter, changing target size and appearance, real time, noise, etc. Depending upon the methodology, i.e., discriminative or generative, VOT	Academia

	may be considered either classification or search problem. Although a lot of work have been published in the field of VOT, but still a long way is ahead as not a single tracker exists which handles all the real time problems.	
Dr. Fayyaz Minhas Assistant Professor PIEAS Pakistan	**Title: Learning computing of the future** Abstract: Computing is a young field and an quickly evolving one as well. In this talk, a number of different emerging technologies related to computing and their impact on the overall field and the world will be discussed -- ranging from electronic cars and bioinformatics to quantum computing and deep learning. The main objective is to give students, faculty and industry a peek into the future so that Pakistan should be ready to take on these challenges.	Academia
Prof. Dr. Andrew Ware Professor University of SouthWales, UK	**Title: Learning for Data** Abstract: Machine learning, data mining, and predictive analytics are all terms that can be used to mean the same thing. In essence they refer to the use of relatively powerful computers to work through large volumes of data, which can be diverse in nature, in order to detect hitherto hidden patterns and correlations that can, in many cases, be used to predict future patterns and correlations. Usually these predictions are at the micro rather than the macro level of activity. For example, the aim of deploying the techniques might be to predict whether a particular individual will develop a certain disease, buy a particular product, or like a certain type of music. These micro level predictions contrast to macro level predictions that are more likely to try and determine such things as the percentage of people that will develop a certain disease, buy a particular product, or like a certain type of music. The techniques are having an increasingly profound impact on the way businesses, healthcare providers, and all manner of other entities are going about their daily business. The talk will investigate some of the predominant paradigms associated with the subject and highlight the strengths and weaknesses that they possess. Success stories will be examined and failures analysed. In short, the aim will be to help those interested in the subject plot a path that helps ensure that the useful nuggets of information hidden deeply within data are located and understood in a timely and proficient manner.	Academia
Dr. Fan Zhang	**Title: Implementation of Real Time Processing**	Academia

IBM USA	**Pipelines for Big Data Analytic Applications** Abstract: "Big data" and "data deluge" have been emerging as major challenges for scientific computing. Healthcare scientific applications, such as body area network, require of deploying hundreds of interconnected sensors to monitor the health status of a host. As another example, the Laser Interferometer Gravitational-wave Observatory (LIGO) sites daily collect more than Terabyte data from thousands of distributed sensors for real time processing. Follow-up data analysis would normally involve moving the collected big data to a cloud data center. Therefore, an efficient cloud platform with very elastic scaling capacity is needed to support such kind of real time streaming data applications. In this talk, I will present a series of on-going big-data projects I have been involved in. As a start, I will talk about an analysis pipeline for close to real-time identification of transient, non-Gaussian noise artifacts – glitches, in our Gravitational-Wave detection project. In particular, I will show how multivariate classifiers, e.g. Artificial Neural Network, Random Forest and Support Vector Machine, are used to identify the glitches. After that, I will introduce my experience of leveraging high throughput computing tools, such as Condor and Hadoop MapReduce to harness the computing capability up to hundreds of cloud instances. Specifically, a task-level adaptive MapReduce simulator will be introduced to process streaming big data. Finally, I will report how the workflow pipelines and output data are interactively presented and visualized in the projects.	
Dr. Akhtar Ali University of Northumbria, UK	**Title: Clinical information systems: the backbone of healthcare services** Abstract: Information systems have drastically changed the world we live in and most of us have experienced and benefited from these systems one way or another, e.g., flights booking, online banking, online shopping and ordering, bank accounts management, library management system, NADRA ID card application, Passport applications and renewals, etc. However, there is a category of information systems, which has not been fully exploited and adopted in Pakistan, i.e., clinical information systems (CIS). In most developed countries, CIS play a central role in the commissioning and delivery of healthcare services from a patient registration, to consultations with a Doctor or Nurse, prescription of medications to diagnoses and care	Academia

	planning, etc. This talk will outline what are CIS, examples of CIS used within NHS England, why are they important, how can they facilitate in a systematic and streamlined delivery of a whole host of healthcare services and what are the opportunities for public and private sector for research and development in this area.	
Dr. Arif Mehmood Post-doc Researcher, Qatar University,	**Title: Background Modelling and Moving Objects Detection** Abstract: Background estimation and moving objects detection are important steps in many high-level vision tasks. Many existing methods estimate background as a low-rank component and moving objects as a sparse matrix without incorporating structural information. Therefore, these algorithms exhibit degraded performance in the presence of dynamic backgrounds, photometric variations, jitter, shadows, and large occlusions. We observe that these backgrounds often span multiple manifolds. Therefore, constraints that ensure continuity on those manifolds will result in better background estimation. Hence, we propose to incorporate the spatial and temporal sparse subspace clustering into the robust principal component analysis (RPCA) framework. To that end, we compute a spatial and temporal graph for a given sequence using motion-aware correlation coefficient. The information captured by both graphs is utilised by estimating the proximity matrices using both the normalized Euclidean and geodesic distances. The low-rank component must be able to efficiently partition the spatiotemporal graphs using these Laplacian matrices. Embedded with the RPCA objective function, these Laplacian matrices constrain the background model to be spatially and temporally consistent, both on linear and nonlinear manifolds. The solution of the proposed objective function is computed by using the linearised alternating direction method with adaptive penalty optimization scheme. Experiments are performed on challenging sequences from five publicly available datasets and are compared with the 23 existing state-of-the-art methods. The results demonstrate excellent performance of the proposed algorithm for both the background estimation and foreground segmentation.	Academia
Dr. Murtaza Taj Assistant Professor LUMS Pakistan	**Title: Various technology interventions performed in partnership with NGOs and government organization to improve governance and service delivery to citizens** Abstract: Focus of my talk would be on bridging the gap	Academia

	between academia, industry and government. More specifically I would be talking about various technology interventions that we performed in partnership with NGOs and government organization to improve governance and service delivery to citizens.	
Dr. Mohsen Ali Assistant Professor ITU Pakistan	**Title: Deconstructive Learning** Abstract: We introduced the novel notion of deconstructive learning and proposed a practical computational framework for deconstructing a broad class of binary classifiers commonly used in computer vision applications. While the ultimate objective of most learning problems is the determination of classifiers from labeled training data, for deconstructive learning, the objects of study are the classifiers themselves. As its name suggests, the goal of deconstructive learning is to deconstruct a given classifier by determining and characterizing (as much as possible) the full extent of its capability, revealing all of its powers, subtleties and limitations. In particular, this problem is motivated by the seemingly innocuous question that given an image-based binary classifier C as a black-box oracle, how much can we learn of its internal working by simply querying it?	Academia
Dr. Muhammad Khurram Shehzad Assistant Professor, PUCIT, Pakistan	**Title: Business Process Automation in the Fourth Industrial Revolution** Abstract: The Fourth Industrial Revolution (4IR) includes a wide range of technologies that are fusing digital, physical and biological worlds to revamp all disciplines. From the computing perspective, the emergence of digitization and artificial intelligence technologies has focused on optimizing the business operations drastically and at the same improve the efficiency of businesses. This raises the question how traditional business process automation will be affected in the 4IR. In this session we will discuss the challenges and opportunities that this evolution brings to the business process automation domain. We will particularly discuss two things: a) how business process automation can benefit from the developments in Natural Language Processing, and b) how continuous process automation can benefit from the advancements in Artificial Intelligence domain?	Academia
Mr. Fahid Javeed Consultant Penta Consulting Pakistan	**Topic: Importance of Project Management for Engineers** Abstract: "It must be considered that there is nothing more difficult to carry out nor more doubtful of success nor more dangerous to handle than to initiate a new	Industry

	order of things." ~ Machiavelli Engineers are always involved in projects, either as designers, team members or project leaders. Being invoiced in technical activities, there is a general lack of knowledge about the benefits of a formal project management. It would codify the work done while leading projects over their careers and be useful in future career transitions. True engineering is managing man, money and machines. Every engineer is a Project Manager.	
Mr. Sufian Saeed Head - Digital Banking & ADCs at MCB Islamic Bank Limited	**Title: Future of Money & Banking Trends in Digital World.** Abstract: • The Future of Money • Factors Signaling Change • Importance of Digitization • Cultural Pulse • Banking Trends in Digital World • State of the Financial Industry • The Digital Disruption; Fintech & Banks	Industry
Mr. Usman Parez Solution Delivery Manager Intech Process Automation Pakistan	**Title: Industrial IoT and Computer Sciences**	Industry
Mr. Kamran Shahid COO XGear Pakistan	**Title: Entrepreneurship - Why and How?**	Industry
Mr. Bilal Siddique CEO Convincing Solutions Pakistan	**Title: Open source BPM and ERP for local industry**	Industry