



Workshop on Undergrad STEM Education in Pakistan

20-24 June, 2022



Balochistan University of IT, Engineering and Management Sciences (BUITEMS) is organizing a weeklong workshop with the title, “Undergrad STEM Education in Pakistan”, for the faculty members of Universities and Undergrad Colleges of Balochistan. The event is sponsored by the British Council and technically co-sponsored by the National Center for Robotics and Automation (NCRA), Pakistan. The talks will be attended by more than 70 Academic Professionals (mostly PhD’s) in the field of Computer Science and Electrical Engineering. Our goal is to build skills in Robotics and AI in the realm of Industry 4.0, as well as spread awareness of the broad array of career opportunities available. Through this workshop we also aim to improve capacity of faculty in course design and motivate them to encourage students to for go STEM (Science, Technology, Engineering and Maths) Projects in their Undergrad Projects.



Keynote: Neuro-symbolic AI - building sentient machines

June 22, 3:20 PM

Minhaaj Rehman, CEO & Chief Data Scientist Psyda

Minhaaj Rehman is visiting professor, Podcaster, CEO & chief data scientist of Psyda Solutions, an AI-enabled academic and industrial research agency focused on psychographic profiling and value generation through machine learning and deep learning. Mr. Rehman’s research interests include psychometrics, personality psychology, and its applications for education and businesses using machine learning & deep neural networks. He is also a consultant to assist cutting-edge startups and sits on advisory boards of various companies and organizations. He is the author of the book “**Psychometrics in Human Resource Management**”.

Abstract: AI has achieved remarkable feats in its brief history despite profound limitations of scalability and explainability. Current state of research is a stagnation, given the gigantic compute costs of LLMs (Large Language Models) and lack of reproducibility by scientific community. Incremental increases in progress towards AGI are limited, overhyped and expensive. It has become obvious that to build a bio-inspired sentient machine, human senses must be reproduced, and multi-modal learning must be understood in its entirety. This has led researchers to embark on 3rd Generation of AI that pursues this lofty goal. Cognitive Computing Lab at Intel & MIT-IBM WATSON AI Lab are working on such daunting problems as we speak. This talk will explore some of the developments from these labs as well as some other avenues of research in the same direction.



Digital Twins & Industrial Wireless Sensor Networks

June 22, 4:30 PM

Dr. Mohsin Raza, Edge Hill University, UK

Dr. Mohsin Raza completed his PhD from Northumbria University, UK and MS degrees in Electronic Engineering from Mohammad Ali Jinnah University (MAJU), Pakistan. He is a senior lecturer at the Department of Computer Science, Edge Hill University, UK. His research interests include IoT, 5G and wireless networks, autonomous transportation systems, machine learning, Industry 4.0 and digital twins.



Writing Correct Software for Complex and Critical Applications

June 21, 1:30 PM

Dr. Franco Raimondi, HoD Computer Science, Middlesex Uni, UK

Dr. Franco Raimondi completed PhD in Computer Science from University College London, UK, in 2006 and M.Sc in Physics from Università Statale di Milano, Italy, in 1998. He is a Professor and Head of the Department of Computer Science at Middlesex University, UK and an Amazon Scholar in the Prime Video Automated Reasoning Group. His research interests include intelligent robotics and multi-agent system.



Robotics education - an avenue for forming connections across disciplines

June 21, 3:40 PM

Dr. Abdul Basit Memon, Habib University

Dr. Abdul Basit Memon received his MS in Electrical Engineering and MS and PhD in Mathematics from Georgia Institute of Technology, USA, in 2015. His doctoral thesis was one of the five nominated for the annual Sigma XI Best PhD. Dissertation Award at Georgia Tech. Dr. Memon conducts research in Mathematical Systems Theory, which deals with the mathematical modelling, analysis, and control of systems and studying systems arising from considering the locomotion problem in robotics.



Reinforcement Learning & it's Applications in Robotics

June 22, 11:20 PM

Dr. Hassan Jaleel, LUMS

Dr. Hassan Jaleel received MS and PhD in Electrical and Computer Engineering in Systems and Control from the Georgia Institute of Technology, USA. He is an Assistant Professor at the Lahore University of Management Sciences (LUMS), Pakistan. Before joining LUMS, he was a Postdoctoral Research Fellow at the King Abdullah University of Science & Technology (KAUST). His research interests include real-time distributed optimization, game theory, and stochastic geometry.



Communication with and among Robots

June 24, 11:35 AM

Dr. Kamran Ali, Middlesex University, UK

Dr. Kamran Ali holds PhD and MS in Computer Science from Middlesex University, UK and BUITEMS, Pakistan, in 2018 and 2004, respectively. Dr. Ali is a Lecturer at Middlesex University, UK and has a proven track record of research publications on innovative solutions. He is looking for a challenging career in 5G, Smart Cities, and Mobile Cloud Computing areas.

Course Design, Assessment & Evaluation

June 24, 10:30 AM

Dr. Syed Muhammad, Middlesex University, UK

Dr. Syed Muhammad received PhD in Strategic Management from Middlesex University, UK. He is senior Lecturer in strategic Management at Middlesex University, UK.



Distributed AI in Robotics

June 22, 04:35 PM

Dr. Ayesha Maqbool, NUST Quetta

Dr. Ayesha Maqbool has done PhD in Automatic Control and System Engineering from the University of Sheffield, UK, focusing on Agent-based mission planning for Multiple Unmanned Autonomous Vehicles. She is currently serving as an Associate Professor in the Computer Science department at the National University of Sciences and Technology NUST, Balochistan Campus. She is working to develop a smart distributed system, distributed AI, machine learning and system engineering.



State of the Art STEM Robotics

June 23, 9:30 AM

Prof. Dr. Muhammad Haroon Yousaf, UET Taxila

Dr. Muhammad Haroon completed his PhD and MS in Computer Engineering from UET Taxila, Pakistan, in 2012 and 2007, respectively. He is the director of Swarm Robotics Laboratory (NCRA) and a Professor in the Computer Engineering department at UET Taxila, Pakistan. His research interest includes Computer Vision, Robotics and Machine Learning.



Mathematics for Machine Learning

June 20, 10:05 AM

Dr. Abdul Samad, HoD Computer Science, Habib University

Dr. Abdul Samad received his PhD and MS in Computer Science from the University of Georgia, USA, in 2013. He is the program director and Assistant Professor at the Computer Science department of Habib University, Karachi. His research interests include AI and robotics.



How can AI help building the Developing Countries

June 22, 9:30 AM

Dr. Faisal Ahmad Khan, Former Pro-VC BUITEMS

Dr. Faisal Ahmad Khan received PhD and MS in Electrical and Computer Engineering from the Georgia Institute of Technology, USA, in 2012. He has been working with the Faculty of Information and Communication Technology, BUITEMS, since October 2007. He has worked as Pro-Vice-Chancellor, BUITEMS and Dean of the Faculty of Engineering at BUITEMS. His research interests include a cross layer in communication networks, network security, and applied machine learning.



Teachers as Entrepreneurs: Turning Your Research Projects into Startups

June 20, 03:15 PM

Muhammad Shah Khan, Director National Incubation Centre, Quetta

Muhammad Shah Khan is the founder and director of the National Incubation Center (NIC) Quetta and also the founder of the BUITEMS Business Incubation and Entrepreneurship Center (BBIEC), CPEC Center of Excellence, and BUITEMS Executive Education Center (BEEC). He has a proven track record of innovation and result-orientation through strategic focus closely mirroring organizational needs and resource optimization. Mr. Shah has mentored dozens of startups and performed as an advisor to several successful startups.



Swarm Intelligence in Robotics

June 23, 01:20 AM

Dr. Bushra Naeem, HoD IT, BUITEMS

Dr. Bushra Naeem holds PhD and MS in Electrical Engineering from Universiti Teknologi Malaysia, Malaysia and the University of Exeter, UK, in 2016 and 2010, respectively. She is currently working as an Associate Professor and Chairperson Department of Information Technology at BUITEMS, Quetta, Pakistan.



Cyber Security concerns in Industrial IoTs/ Robots

June 22, 01:05 PM

Dr. Mehmood Baryalai, HoD Computer Science, BUITEMS

Dr. Baryalai is a multi-disciplinary geek working in the domains of cybersecurity, secure software development, business intelligence and automation systems, artificial intelligence, and distributed multi-party & privacy-preserving computations. He has been working with organizations like Pakistan Internet Exchange (PIE), NADR.A, World Bank, and Government of Balochistan etc., to deliver high-tech solutions. He has also been teaching in BUITEMS since 2011. Currently, he is heading the Computer Science Department at BUITEMS.



Opportunities for Women in STEM

June 22, 12:20 PM

Syeda Sana Hussain, Director Human Capital at 10Pearls

Syeda Sana Hussain is a senior director at 10Pearls and director of Human Capital at 10Pearls, Pakistan. She is a seasoned HR practitioner with over 12 years of experience leading diverse teams, and she is passionate about people and engaging them for high growth organizations. As a strategy head in a digital solutions company, she has a deliberate focus on the capacity

building of talent and the emergence and sustainability of stronger communities and women in tech networks within Pakistan.



Policy Gradient Methods in Deep Reinforcement Learning for Robotic Control

June 22, 10:15 AM

Dr. Anayatullah, PI CARL-NCRA, Director ORIC, BUIITEMS

Dr. Anayatullah holds a PhD in Engineering and an MS in Electrical Communication Engineering from University of Kassel, Germany. He is the PI of Control Automotive and Robotics Lab (CARL) under the National Center of Robotics and Automation (NCRA) and director of ORIC BUIITEMS. His research interest is in Deep Reinforcement

Learning, Evolutionary and Learning based Robotics.



Introduction to Computer Vision, Machine Learning & Deep Learning

June 21, 9:30 AM

Dr. Muhammad Imr.an Qureshi

Dr. Muhammad Imran received a master's and PhD from NUST, Islamabad and Florida State University, Tallahassee, FL, USA, respectively. He is currently working as an Associate Professor in the Department of Electrical Engineering at BUIITEMS, Quetta, since 2007. He is also associated with the CARL-NCRA as a Co-PI and developing a bio-inspired robot using AI techniques. His research interest is in Digital Image Processing, Computer Vision, Machine Learning and Deep Learning.



Development of a Robot from Scratch

June 24, 9:30 AM

Syed Izzat Ullah

Syed Izzat Ullah received MS in Electrical Engineering (Robotics and Control Systems) from Lahore University of Management Sciences (LUMS), Lahore, in 2019. He is currently pursuing his PhD from Texas A&M University, USA, and he served as team lead of Control Automotive and Robotics Laboratory (NCRA) at BUIETMS, Quetta. He has a great interest in Robotics, AI and Drone navigation.