

Undergrad STEM Education in Pakistan (AI and Robotics)

| Start Time | Duration | | End Time | Activity Title | Speaker/Instructor | Location |
|-------------------|----------|-------|---|---|--|---------------|
| | Talk | Q & A | | | | |
| 20.06.2022 | | | 1st DAY (Introduction to AI, CAD Modelling and Python Programming) | | | |
| 09:00:00 AM | 45 | 0 | 09:45:00 AM | Registration of Participants | CARL Staff | Help Desk |
| 09:45:00 AM | 10 | 0 | 09:55:00 AM | Tilawat-e-Quran Pak | Qari | Training Hall |
| 09:55:00 AM | 10 | 0 | 10:05:00 AM | Opening Remarks | Dr. Anayatullah, Director ORIC BUIITEMS, Quetta | Training Hall |
| 10:05:00 AM | 45 | 15 | 11:05:00 AM | Invited talk - Introduction to AI and Mathematics for Machine Learning | Dr. Abdul Samad, Program Director Computer Science Department, Habib University, Karachi | Training Hall |
| 11:05:00 AM | 25 | 0 | 11:30:00 AM | Tea Break | | Tea Room |
| 11:30:00 AM | 20 | 0 | 11:50:00 AM | Pre-Workshop Survey | Seher Sajjad, CARL BUIITEMS, Quetta | Training Hall |
| 11:50:00 AM | 75 | 0 | 01:05:00 PM | Hands on - Essential of Python | Hira, CARL BUIITEMS Quetta | Training Hall |
| 01:05:00 PM | 70 | 0 | 02:15:00 PM | Hands on - CAD modeling and rapid prototyping | Hamza Nadeem, BUIITEMS Quetta | Training Hall |
| 02:15:00 PM | 60 | 0 | 03:15:00 PM | Namaz and Lunch Break | | Saigon cafe |
| 03:15:00 PM | 30 | 15 | 04:00:00 PM | Invited talk- Teachers as Entrepreneurs: Turning Your Research Projects into Startups | Muhammad Shah, Director NIC BUIITEMS, Quetta | Training Hall |
| 04:00:00 PM | 20 | 0 | 04:20:00 PM | Tea Break | | Tea Room |
| 04:20:00 PM | 60 | 0 | 05:20:00 PM | Hands on - Python Libraries for Data Science | Hira, CARL BUIITEMS Quetta | Training Hall |
| 05:20:00 PM | 10 | 0 | 05:30:00 PM | Feedback | Seher Sajjad, CARL BUIITEMS, Quetta | Training Hall |

| | | | | | | |
|-------------------|----|----|--|---|---|------------------------|
| 21.06.2022 | | | 2nd DAY (Introduction to Computer Vision, Robotics and CoppeliaSim Simulator) | | | |
| 09:30:00 AM | 60 | 0 | 10:30:00 AM | Lecture - Introduction to Computer Vision, Machine Learning and Deep Learning | Dr. Muhamad Imran, Associate Professor, BUIITEMS Quetta | Training Hall |
| 10:30:00 AM | 75 | 0 | 11:45:00 AM | Hands on - Introduction to CoppeliaSim robotic simulator | Hamza Nadeem, Ramsha Shahid, CARL BUIITEMS, Quetta | Training Hall |
| 11:45:00 AM | 30 | 0 | 12:15:00 PM | Tea Break | | Tea Room |
| 12:15:00 PM | 75 | 0 | 01:30:00 PM | Hands on - Introduction to Computer Vision, Machine Learning and Deep Learning Frameworks | Dr. Muhamad Imran, Associate Professor, BUIITEMS Quetta | Training Hall |
| 01:30:00 PM | 60 | 10 | 02:40:00 PM | Invited talk - Writing Correct Software for Complex and Critical Applications | Dr. Franco Raimondi, Middlesex University, UK | Training Hall (online) |
| 02:40:00 PM | 60 | 0 | 03:40:00 PM | Namaz and Lunch Break | | Saigon cafe |
| 03:40:00 PM | 30 | 10 | 04:20:00 PM | Lecture - Robotics Education - An Avenue for Forming Connections across Disciplines | Dr. Abdul Basit Mamon, Assistant Professor, Habib University, Karachi | Training Hall |
| 04:20:00 PM | 15 | 0 | 04:35:00 PM | Tea Break | | Tea Room |
| 04:35:00 PM | 30 | 10 | 05:15:00 PM | Invited talk - Distributed AI in Robotics | Dr Ayesha Maqbool, Associate Professor, NUST Balochistan Campus, Quetta | Training Hall |
| 05:15:00 PM | 15 | 0 | 05:30:00 PM | Feedback | Seher Sajjad, CARL BUIITEMS, Quetta | Training Hall |

| 22.06.2022 | | | 3rd DAY (Introduction to RL and Application of AI) | | | |
|-------------|-----|----|--|---|---|-------------------------------|
| 09:30:00 AM | 30 | 15 | 10:15:00 AM | Invited talk - How can AI help building the developing countries | Dr. Faisal Ahmad Khan, Associate Professor BUITEMS Quetta | Orange Hall |
| 10:15:00 AM | 30 | 15 | 11:00:00 AM | Lecture – Policy Gradient Methods in Deep Reinforcement Learning for Robotic Control | Dr. Anayatullah, Director ORIC BUITEMS, Quetta | Orange Hall |
| 11:00:00 AM | 20 | 0 | 11:20:00 AM | Tea Break | | Tea Room |
| 11:20:00 AM | 45 | 15 | 12:20:00 PM | Invited talk – Reinforcement Learning and Its Applications in Robotics | Dr. Hassan Jaleel, Assistant Professor, LUMS Lahore | Orange Hall |
| 12:20:00 PM | 30 | 15 | 01:05:00 PM | Invited talk – Opportunities for Women in STEM | Syeda Sana Hussain, Senior Director – Human Capital, 10Pearls Global Digital Innovation Partner | Orange Hall |
| 01:05:00 PM | 30 | 15 | 01:50:00 PM | Invited talk – Cyber security Concerns in Industrial IoTs | Dr. Mehmood Baryalai, Associate Professor BUITEMS, Quetta | Orange Hall |
| 01:50:00 PM | 70 | 0 | 03:00:00 PM | Namaz and Lunch Break | | Saigon cafe |
| 03:00:00 PM | 20 | 0 | 03:20:00 PM | Tilawat and Opening Remarks | Dr. Anayatullah, Director ORIC BUITEMS, Quetta | Orange Hall |
| 03:20:00 PM | 60 | 10 | 04:30:00 PM | Keynote – Neuro-symbolic AI – Building Sentient Machines | Minhaaj Rehman, CEO and Chief Data Scientist of Psyda Solutions | Orange Hall |
| 04:30:00 PM | 30 | 10 | 05:10:00 PM | Invited talk – Digital Twins and Industrial wireless sensor networks Course Design, Assessment and Evaluation | Dr. Mohsin Raza, Senior Lecturer, Edge Hill University, UK | Orange Hall |
| 05:10:00 PM | 30 | 0 | 05:40:00 PM | Tea Break | | Tea Room |
| 08:15:00 PM | 120 | 0 | 10:15:00 PM | Workshop Dinner | | Takatu Lodges Lawn (BUIITEMS) |

| 23.06.2022 | | | 4th DAY (Introduction to STEM Robotics and Robotics Hands-on) | | | |
|-------------|----|----|---|---|--|------------------------|
| 09:30:00 AM | 45 | 15 | 10:30:00 AM | Invited talk – State-of-the-art STEM robotics | Dr. Muhammad Haroon Yousaf, Director Swarm Robotics Lab (NCRA), UET Texila | Training Hall |
| 10:30:00 AM | 75 | 0 | 11:45:00 AM | Hands on – Introduction to Stem Robots and practical hands on Mbot | Khawar Ali, Tallat Mahmood, Hamza Nawar, CARL BUIITEMS, Quetta | Training Hall |
| 11:45:00 AM | 20 | 0 | 12:05:00 PM | Tea Break | | Tea Room |
| 12:05:00 PM | 75 | 0 | 01:20:00 PM | Hands on – Introduction, setup and installation of Robot Operating System (ROS) | Ramsha Shahid, Khawar Ali, CARL BUIITEMS, Quetta | Training Hall |
| 01:20:00 PM | 30 | 10 | 02:00:00 PM | Invited talk – Swarm Intelligence in Robotics | Dr. Bushra Naeem, Associate Professor BUIITEMS, Quetta | Training Hall |
| 02:00:00 PM | 60 | 0 | 03:00:00 PM | Namaz and Lunch Break | | Saigon cafe |
| 03:00:00 PM | 45 | 15 | 04:00:00 PM | Security in Mechatronics and Robotics | Dr Abubakar Lasebae, Director of Programmes – School of Science & Technology, Middlesex University, UK | Training Hall (online) |
| 04:00:00 PM | 15 | 0 | 04:15:00 PM | Tea Break | | Tea Room |
| 04:15:00 PM | 60 | 0 | 05:15:00 PM | Hands on – Activity on the implementation of fundamental concepts using Turtlebot-3 and ROS | Khawar Ali, Tallat Mahmood, Hamza Anwar, Ramsha Shahid, CARL BUIITEMS, Quetta | Training Hall |
| 05:15:00 PM | 15 | 0 | 05:30:00 PM | Feedback | Seher Sajjad, CARL BUIITEMS, Quetta | Training Hall |

24.06.2022**5th DAY (Robot Development and Course Design)**

| | | | | | | |
|-------------|-----|----|-------------|---|--|------------------------|
| 09:30:00 AM | 60 | 0 | 10:30:00 AM | Lecture – Development of a Robot from scratch | Syed Izzat Ullah, Texas A&M University, USA | Training Hall (online) |
| 10:30:00 AM | 30 | 15 | 11:15:00 AM | Invited talk – Course Design, Assessment and Evaluation | Dr. Syed Muhammad, Senior Lecturer, Middlesex University, UK | Training Hall |
| 11:15:00 AM | 20 | 0 | 11:35:00 AM | Tea Break | | Tea Room |
| 11:35:00 AM | 30 | 15 | 12:20:00 PM | Invited talk – Communication with and among the robots | Dr. Kamran, Lecturer, Middlesex University, UK | Training Hall |
| 12:20:00 PM | 30 | 0 | 12:50:00 PM | Feedback and Post-Workshop Survey | Seher Sajjad, CARL BUIITEMS, Quetta | Training Hall |
| 12:50:00 PM | 40 | 0 | 01:30:00 PM | Closing Ceremony + Certification Distribution | Dr Anayat Ullah, Director ORIC, BUIITEMS, Quetta | Training Hall |
| 01:30:00 PM | 210 | 0 | 05:00:00 PM | Lunch Break and End of the Workshop | | Saigon cafe |