



Director

Dr Omar Usman Khan

Professor

PhD (CCE), Politecnico di Torino, Italy (2013)

MS (CSE), GIKI Institute, Swabi (2008)

MS (DS), Brunel University, UK (2005)

BS (CS&SE), Greenwich University, UK (2002)

The campus is located in the vicinity of Hayatabad; a modern residential suburb of Peshawar. Spread over an area of 4 acres, the campus houses an academic and administrative block; constructed in the university's signature red brick architectural style, and a hostel for boys. It offers a conducive environment with green lawns, flora, plantations, and water fountains. The campus is conveniently close to multiple hospitals, markets, residential areas, sports complexes, government offices, and food streets. With multiple routes, transportation via the city's Metro BRT is quite convenient and economical, and can be accessed through the university's own metro BRT bus stop.

To add value to the student learning process and academic excellence, the university has state of the art infrastructure and academic resources, along with highly qualified and committed faculty. The faculty are up-to-date with both scientific and technological progresses, industry requirements, and global trends in their respective fields. With one of the best student to faculty ratios, students have more exposure to learning and working closely with them. The campus has state of the art computing, engineering, and computer assisted language/communications labs. High speed network access to all devices is made available through campus-wide wireless access points. There is a provision of GPU and big-data enabled high performance computing

facilities for its research students. There are separate labs for students of all levels who require them to work on their projects and research thesis. The engineering labs include Communications, Antennas, Electronics, Microprocessors, Digital Signal Processing, Power Systems, Control Systems, Electrical Machines, and Power Electronics labs, along with an engineering workshop. The campus also offers co-working spaces and pre-incubation environment to selected students. The campus library has a collection of over 15,000 unique books, and hundreds of printed research journals. Subscription to research journals of IEEE, Springer, Science Direct, and ACM, are made and these can be accessed from student homes through VPN. All classrooms, labs, and halls are fully air-conditioned. For class-room learning, all rooms are equipped with audio/video facilities.

The campus highly encourages its students to get affiliated with various societies of the campus. Students are offered membership of local and regional chapters of the ACM, IEEE, and Microsoft. Technical societies deal with activities related to programming & engineering competitions, whereas social societies include activities associated to travel & hiking, indoor & outdoor sports, E-gaming, religious events, debating & fine arts, music, and other philanthropic activities.

Among the programs offered by the campus, the BS in Electrical Engineering has the distinction of

being one of the first few in Khyber Pakhtunkhwa to have received Outcome Based Level II accreditation status by the Pakistan Engineering Council (PEC). Likewise, the various BS computing programs are regularly accredited with the National Computing Education and Accreditation Council (NCEAC). With the input from these accreditation councils, and Industrial Advisory Boards, the curriculum and study plans are highly customized according to the national industrial needs. As such, graduates of the campus are well received by the industry and hold prominent positions in national and multi-national corporations.

Programs offered at Peshawar Campus:

- BS (Artificial Intelligence)
- BS (Computer Science)
- BS (Electrical Engineering)
- BS (Software Engineering)
- MS (Computer Science)
- MS (Data Science)
- PhD (Computer Science)

The scope of research carried out at the campus spans various sub-specialties of Computing and Engineering. The campus has a number of research active faculty who are engaged in these areas through various research groups:

National University Systems and Simulations (NUSyS) Group



The NUSyS covers research activities in a diverse set of disciplines ranging from wireless and sensor networks, signal processing, smart grids, speech recognition, scientific computing, computational electromagnetics, and quantum computing. The group has worked on various major funded projects of the Higher Education Commission, NATO, and NRTC, along with smaller projects of the US consulate, and Ignite ICTR&D. The group has collaborations and partnerships with the Princeton University (USA), Waseda University (Japan), Politecnico di Torino (Italy), University of California (UCLA, USA). The group page is maintained at <http://pwr.nu.edu.pk/nusys>. The group is headed by Dr. Usman Abbasi. Key projects completed in the group are:

- Automatic Speech Recognition for Pashto (Funding Agency: NRTC, PKR 2 Million)
- Design and Analysis of a 400 km Quantum Key Distribution Link (Funding Agency: NATO-SPS, PKR 8 Million)
- Low-Cost Seismic Monitoring Network (Funding Agency: HEC, PKR 2.8 Million)

Center for Computational Linguistics (CoCL)



The center focusses on developing algorithms for better processing and analyzing natural languages, with a special focus on regional languages like Urdu and Pashto. The work is multi-disciplinary in nature, and builds upon the fields of social linguistics, psycholinguistics, pragmatics, and machine learning. The group has collaborations, research, and data sharing arrangements with the Pashto Academy (University of Peshawar) and Al-Khawarizmi Institute of Computer Science (UET Lahore). It is currently being led by Dr. Omar Usman Khan. Group activities are maintained at

<http://pwr.nu.edu.pk/CoCL>.

Key activities of the group include:

- Automatic Thesaurus Generation for Pashto
- Classification System for Urdu Poetry
- Deep learning based font style transfer for Urdu
- A grammar checker for Pashto
- Pashto Lexicon development of the Pashto Academy
- Urmuri Lexicon development (Funding body: Pashto Academy, 0.5 Million)



Comp. Info. Research Lab

Computational Informatics Research Lab (CiRL)

The Computational Informatics Research Lab (CiRL) is a multidisciplinary group of researchers with expertise in computational imaging, bioinformatics, and machine learning. The group was established in 2016 with the goal of developing new computational methods for the analysis and interpretation of biomedical data. CiRL's research interests include medical image processing, bioinformatics, machine learning, data mining & visualization, and clinical decision support systems. The group has developed a number of innovative computational methods for the analysis of biomedical data. These methods have been used to improve the diagnosis and treatment of a variety of diseases, including cancer, Alzheimer's disease, and heart disease. CiRL has strong collaborations with other research groups at the National University of Computer and Emerging Sciences (NUCES), as well as with international research groups at Politecnico di Torino, Italy, and local hospitals Peshawar. The group is led by Dr. Hafeez Ur Rehman, who is an internationally recognized expert in computational imaging and bioinformatics. The research activities are supported by a number of grants from the government of Pakistan, as well as from international funding agencies. Group activities are maintained at

<http://pwr.nu.edu.pk/CiRL>.

The list of ongoing & completed works which have received funding to a total of 1 Million include include:

- Incorporating Evolving Biological Information in Protein Function Prediction (Grant Funding Body: HEC)
- Detection of Lung Carcinoma using Genomics (Funding Body: Ignite)
- Pathological Myopia Detection using Fundus Images (Funding Body: Ignite)
- Iris based Non-invasive Glucose Monitoring System (Funding Body: US Consulate)
- Detection and Localization of Covid-19 from Chest Radiographs (Funding Body: FAST)
- Genetic Subtype of MGMT Prediction using MRI (Europe, Middle East and Africa Winners in Health Category; Microsoft Imagine Cup 2023)
- Genetic Subtype of MGMT Prediction using MRI (Pakistan National Winners; Microsoft Imagine Cup 2023)

Decision Support Systems (DSS) Group



The research goals of this group are directed towards understanding and building of intelligent models for assisting and supporting decision making in various application areas such as image processing, security, and bioinformatics. The group is actively engaged in utilizing machine learning methods such as rough sets, granular computing and three-way decisions, in inducing rules for complex decision making. The group headed by Dr. Nouman Azam has produced 3 PhD's and a number of MS students. The total current student strength

of the group stands at more than 20. The group has received multiple grants from the US Consulate in Peshawar, the Ignite ICT R&D and has research partners in Umm Al-Qura University, Saudi Arabia, University of Regina, Canada and Qatar University, Doha, Qatar. Currently funded projects include:

- Three-way Approach for the Prediction of Protein Structure from Images (Funding Agency: FAST, 0.7 Million)

Computing Laboratory NU (CoLabNU)



The NU computing laboratory, established in 2017 at the campus, is a pre-incubation lab cum office with the aim of elevating the quality of undergraduate and graduate students. Students are enrolled at an early stage of their degree, and depending on their performance and set targets, are allowed to promote across tiers as they mature into later stages of their degree. A multi-tier mentoring scheme is followed in the lab, involving both senior students, and faculty. The work environment, and the synergy between colab members, enables students to take charge and work with topics of contemporary importance that would otherwise not be covered in their courses. The group is currently headed by Dr. Musadaq Mansoor.

