



GOAL 4

Quality Education

9

Research Projects

372

Publications

13

Patents

3

IPRs Licensed to
Industry

Industry: AWAAZ AI Tech

NUST licensed out 3 X IPRs of project for Autistic Children to the local Industry, AWAAZ AI Tech. Our researchers have successfully developed AI-based application which will provide interactive learning modules for Autistic Children ultimately addressing a huge challenge which autistic children are facing in terms of learning and education not only in Pakistan but also globally. The application relies on AI algorithms for customization to different learning and communication needs of autistic children at different stages. Aawaz generates different sentences from random selection of words and encourages user to learn and create new sentences. Aawaz improves vocabulary, language learning and social interactions for the children which need special attention, without compromising on the speed of communication.



NUST Academic Programmes

17,483 Current Students, 132 Academic Programmes, 19 Constituent Schools & Colleges, 7 Campuses in 5 Cities, 400th Globally QS World University Rankings 2020

NUST offers top-notch education with a comprehensive curriculum of 29 UG, 61 Masters and 42 Ph.D. programmes, offered in 19 different schools and colleges, all over Pakistan. NUST has an enrollment of 17.5k students and boasts of a competitive pool of 1186 faculty members out of which 50% are Ph.D. qualified. NUST is the top university of Engineering and Technology in Pakistan, and 400th in the world according to QS World University Rankings 2020. NUST has also been nominated in the list of the top young universities of the world, declared 51st among world universities under the age of 50 - QS World University Rankings 2020.

Labs and Research Facilities

NUST has been equipped with state-of-the-art labs to facilitate practical knowledge and applied research. There are more than 330+ labs for UG programmes and 35 key labs for advanced research. NUST also provides on-campus cloud infrastructure offering IAAS, SAAS services. Some of the notable research-intensive labs include Anechoic Chamber, Image Processing Centre GPU-based Supercomputing, Supersonic Wind Tunnel, Material Characterization Facility at Micro & Nano level, Smart Grids, Robotics & Control Lab and Neuro-Informatics, etc.

Professional Development Centre

600+ Pieces of training, 13000 Personnel Trained, 800+ organizations

PDC is imparting high quality continuing education to NUST employees and industry professionals in the field of Management, Engineering and Information Technology. PDC has conducted so far 600+ training and trained more than 13000 personnel and made a huge clientele of over 800 organizations. PDC is leveraging upon a rich faculty base of 1200 members of NUST, including more than 600+ PhDs.

PDC is considered one of the most sought after institutions of Pakistan for short term courses in various fields and has maintained a tradition of excellence since its inception in 2007. The prime objective of PDC is to provide access to knowledge, capacity building and continuing education facility to professionals from all walks of life.

Al-Qalam Programme MacJannet Award Winner by Talloires Network 100 Children fully-funded

NUST Community Services Club (NCSC) Al-Qalam Programme was launched in 2015 by two highly motivated members of the club. According to the National Education Management Information System (NEMIS) statistics on education in Pakistan, more than 40% of children between the ages of 5 and 16 are not enrolled in schools. Moreover, more than 60% of children in schools drop out before matriculation at a college or finishing university. Most of these children are deprived of education because of their families' financial constraints. NCSC members decided to play their role in ameliorating this situation and help, thus, Al-Qalam (Arabic: مِلقال, "The Pen") was born.

The programme was launched on the basis of voluntary monthly donations of Rs. 100 from NUST students and faculty members.



Al-Qalam Programme is an on-going project, run by council members in coordination with class representatives nominated by elected class ambassadors from all departments of NUST. This system assists in enabling coordination and ensures a hassle-free process for collecting donations. In 2018-19, 100 underprivileged children were being funded by this programme. The programme recently won the third place for the prestigious MacJannet programme by Talloires Network. The cash prize worth USD 2500 will enable this programme to further contribute to the cause of providing equal education opportunities to all members of society.

Central Library and Affiliated Libraries

350,000 books/e-books and 30,000 journals/e-journals

A state of the art Central Library has been established in H12 Islamabad Campus along with 17 institutional libraries in different NUST campuses all over Pakistan to house more than 350,000 books/e-books and 30,000 journals/e-journals. Such a facility is open to NUST students, faculty and staff to promote reading culture, facilitate group studies and conduct training on citation management, information literacy and search management. NUST has continued to revive book-keeping culture as well as upgraded the facility with digital formats like e-books/e-journals to keep up with the pace of the modern age. The students are facilitated with publications, presentations, and writings in all formats free of cost, thus committing to free access to education for everyone.

Street School (Sarrak ka Sitara)

'Street School' is one of the projects of Millennium Fellows '19 which aims to create and implement an education/schooling model for young children in the underprivileged slum areas. Street School specifically targets a slum area just beside the NUST campus where displaced Afghan migrants are settled. The goals for the duration of the Street School project of Millennium Fellowship include:

- Designing a curriculum which will cater to different age groups. The curriculum has been customized according to the children's previous exposure to schooling/education. It focuses on basic literacy including but not limited to mathematics, ethics, and morals, interpersonal and soft skills.
- It aims to educate at least 5 students every year to the degree that they are able to join a grade of their respective age group in a functional school. To sponsor their education, funds are also raised by different means.
- To create a solid foundation/organization for the project to sustain it through volunteers' efforts; and expand its radius to other nearby slum areas.



SUMMER SCHOOL

The Summer School at one of the constituent NUST Colleges, College of Electrical and Mechanical Engineering, organized by the National Centre of Robotics and Automation (NUST), was held for two weeks in mid-summer of 2019. This was an exceptional opportunity for the students from different local schools who spent their summer vacations learning the basic programming and interesting electronic circuits concepts to build robots and thus, explored a completely new world of technology. The excitement and enthusiasm of the students were truly admirable.

30 students attended the Summer School and they also participated in various physical activities and games like horse riding and archery, proving to be a great learning experience for the students.



STUDENTS CLUBS AND SOCIETIES

Dedicated office for activities (Students Affairs Directorate, 30+ Students Societies, and Clubs, 5000+ Annual Students Engagement)

Besides academic excellence, NUST ensures that students also develop literacy, creative and leadership qualities to tackle the global challenges. Therefore, NUST has the establishment of several societies and clubs for students to provide them with opportunities to pursue their passions, participate and arrange events under the auspices of a dedicated directorate. The office, Students Affairs Directorate, is responsible for arranging and coordinating co-curricular activities at the campus. The following central clubs and societies are currently operational in NUST:

- NUST Bazm-e-Pakistan (NBP)
- NUST Adventure Club (NAC)
- NUST Environment Club (NEC)
- NUST Science Society (NSS)
- NUST Literary Circle (NLC)
- NUST Book Club (NBC)
- NUST Community Service Club (NCSC)
- NUST Dramatic Club (NDC)
- NUST Debating Society (NDS)
- NUST Media Club (NMC)
- NUST Fine Arts Club (NFAC)
- NUST Bio Reach Society
- NUST Entrepreneurs Club (NEC)
- NUST Leaders Society (NLS)
- NUST Excursion Club (NEC)
- NUST Digital Club (NDC)
- NUST Water Sports Club
- NUST Technical Amusement Club (NTAC)
- NUST Paragliding Club
- NUST Robotics Club (NRC)
- NUST Quiz Club (NQC)
- International Chapter (SCME)
- NUST Trekking Club (NKC)
- NUST GeneUs
- NUST Archery Club (NAC)
- NUST Cultural Club (NCC)
- NUST Fitness Club (NFS)
- NUST Physics and Astronomy (NPA)
- Institution-based Clubs and Societies



Artificial Intelligence Boot Camp

**43 team's participation,
200+ outreach, 1+ industry
Engagement**

NUST held a week-long intensive Bootcamp in Artificial Intelligence and Machine Learning. The objective of this activity was to introduce participants from academia and industry to the basic and advanced concepts of AI and Machine Learning in a crash course format. Speaker from local industry Sky Electric Pvt. Ltd delivered a lecture on the applications of AI and ML in the Smart Grid domain.

The format of the Bootcamp was designed to introduce both the theoretical and practical aspects of AI, and enhance the learning of the participants in the field of AI.

A total of 43 participants registered for the Bootcamp. A project competition was held on the final day of the Bootcamp and the best projects were honored based on evaluations of a panel of judges. Projects "Verification of Air Written Signature" and "Yolo Based Object Detection" were declared winners and runners up for "Best Technical Award" respectively, whereas, "Best Upcoming Talent Award" was given to recognize teams consisting of newcomers who had little to no experience of working in AI and ML, before the Bootcamp.

The primary criterion for this award was a demonstration of the maximum amount of learning within the span of the Bootcamp. The project titled "Exoplanet Detection Using Light Intensity" was declared the overall winner.

Application of BIM and VR for Effective Education in Construction Industry in Pakistan

The construction industry of Pakistan has slowly but positively been moving towards digital solutions since the advent of Information and Communication Technologies (ICT). By moving in the same path, the education practices in the construction domain also warrant the adoption of more digital content for efficient knowledge transfer.

The project being conducted at NUST proposes the application of Building Information Modeling (BIM) and Virtual Reality (VR) to formulate effective construction education practices in Pakistan. The study will develop an application model/framework for the incorporation of BIM and VR in construction education practices. The research infrastructure desired to be procured through this application will contribute to the future innovative research projects involving the areas of Building Information Modeling and Virtual Reality.



Project “Implementation of School-based universal preventive Intervention: Prevention of disruptive Behavior in Children”

Training and research in class management are getting global attention these days, as such strategies play a crucial role in effective education and child development. Access to alternative strategies of discipline has proven to be a promising step for reducing the students’ disruptive behaviors in the classroom and curbing the teachers’ punitive discipline strategies along with preventing later behavioral difficulties. However, few preventive and evidence-based classroom behavior management strategies are employed in schools worldwide, including Pakistan. One intervention for classroom management, Good Behavior Game (GBG) is recognized as an evidence-based and promising preventive strategy to reduce children’s early classroom disruptive behavior. Therefore, the proposed study investigated the teachers’ reported frequency and types of disruptive behaviors in primary grades of schools in Islamabad with the help of an interview guideline. Implementation of the project would supplement the mental health service by preventing behavioral problems and would have a positive impact on the primary education sector.

