



Editor
Dr. Farrukh Arif

Newsletter of NED University VR Center

Issue 4
Jan - June 2020

About VRC

The NED University of Engineering and Technology, Karachi has established a state-of-the-art facility for integrating virtual reality in the education, research and practice. The facility that is housed at the Department of Civil Engineering is named as "NED University Virtual Reality Center" is the first of its kind in the entire region (sub-continent). The facility houses four major systems including, virtual teaming system, walking VR systems, Projection VR system and Passive 3D screen system. The major objectives of VR Center are to gear up the performance, by being a capacity builder, solution provider and knowledge innovation hub.

Facilities

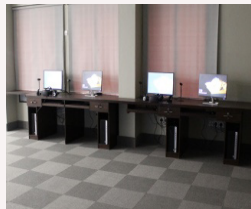
Projection VR System

The projection VR system is based on a Cave concept that has the capability (both from software and hardware perspective) to provide a virtual-cum-immersive experience to a group of people.



Walking VR System

There are multiple walking VR systems available at the center to provide virtual immersive environment to the user specifically for VR designing, and VR based individual training, as per customized needs of the trainee.



Virtual Teaming System

The virtual teaming system is equipped with latest interactive panel, video conferencing and webcasting equipment and software.



Passive 3D Screen

A passive 3D Screen that doesn't require any gadgets by the user has also been installed at NED VR Center. VR center is working on utilizing it for engineering, technology and science related visualization.



Design and Modeling Software

The center is equipped with VR designing and development software, Building Information Modeling platforms, 3D to VR transformation platforms, and VR experience software platforms etc.



Events & Activities

Guest Speaker at TechFest 2020

Dr. Farrukh Arif was the guest speaker on the occasion of TechFest organized by Society for (SENTEC) NED University. Dr. Arif presented on topic of "Augmented Reality". In his talk, Dr. Arif explained Immersive Visualization, its types and its applications in different areas of Science and Technology. The main focus of the talk, however, was regarding Augmented Reality, its scientific as well as common definitions, components, and applications of augmented reality in different areas of science, technology and entertainment. Dr. Arif also showed videos and models of different augmented Reality applications worldwide, and informed audience regarding potential and planned use of AR in near future by NED VR Center in upcoming projects.



Agha Khan Virtual Patient Simulator

Dr. Farrukh Arif was invited to visit Center for Critical for Creative Innovative Thinking (CCIT) and Center for Innovation in Medical Education (CIME) at Agha Khan University Hospital on January 28, 2020. The purpose of visit was to look at the patient simulation facilities available at Center for Innovation in Medical Education (CIME) at AKUH and discuss opportunities for mutual collaboration to develop VR based simulators. Dr. Asad I. Mian, Mentor of CCIT along with his team members were present during discussions and simulation lab visits. It was agreed in principle that CCIT and NED VR Center will collaborate on projects of mutual interests in future.

In Going Projects

1. Virtual Patient Simulator.
2. Projection VR model of a prototype sustainable town.
3. Driving License Test Simulator.

Experience VR! Visits

Batch of 1st year students from the department of software engineering from NED University visited the Virtual Reality Center full of advanced technology and highly intellectual staff.

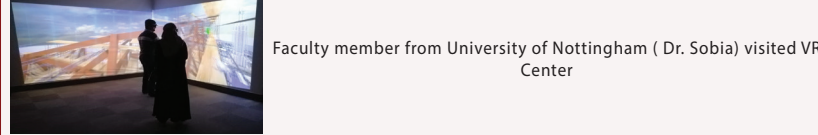
Visitors' Gallery



Pakistan's leading MEP design company FND Private Limited accompanied with Magna Engineering Private Limited visited Virtual Reality Centre at NED university of Engineering & Technology, Karachi on January 8, 2020



Team from Indus Hospital headed by Dr. Abdul Bari Khan visited NED VR Center (January 20, 2020). The team was briefed by Dr. Farrukh Arif regarding different medical related VR applications and also visualized them. They also discussed possible ventures of mutual interests



Faculty member from University of Nottingham (Dr. Sobia) visited VR Center

What's Happening in VR World?

Year 2020 is very hectic year for every business in the world. Likewise the music industry is also affected badly by this pandemic situation. Due to social distancing the arrangement of concerts and live performances is not possible, but here comes the application of Virtual Reality. An American R&B star John Legend had performed Live on June 25 to promote his new album. Legend did not appear in person but as an avatar via the social VR platform Wave. The show is part of an experimental live concerts series that has been taking place on the platform during the pandemic.



<https://theconversation.com/virtual-reality-has-been-boosted-by-coronavirus-here-how-to-avoid-it-leading-us-to-dystopia-141073>

Our Programs

Virtual Reality Center have different programs for academia and industry. Experience VR is a STEM program designed for school and college students in which students experience different scientific and technological aspects in Virtual reality.

Vimagining is an apprenticeship program where students from different universities and graduates join VR Center for 30-40 days and work on developing immersive visualization of different engineering, science and technology issues and aspects under guidance of experts.

VR center is also offering special package of professional services to the construction industry, including VR visualization generation, modeling, and enabling virtual cooperation on projects.

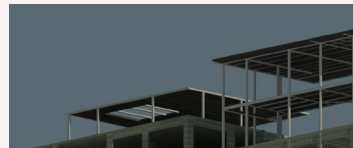
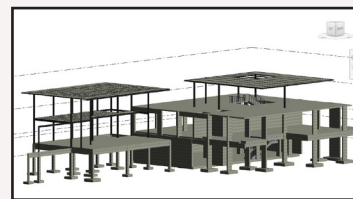
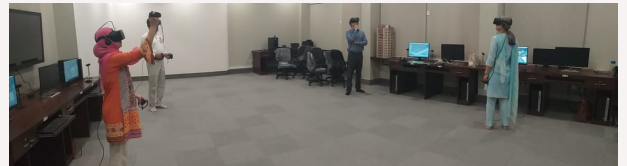
For any queries contact at email or phone provided in the footer of newsletter at the end. For more info visit VR center website.



Project Showcase

For a long time, construction industry has been using conventional methods for defining design and cost scope of the project during semi detailed engineering phase between client and contractor. This process demands proper visualization for every stakeholder to understand the project. Lack of proper visualization during this phase is a huge drawback in this method, it results in longer cost blackout periods and weaker cost control at construction phase when client finally starts visualizing the project. This often leads to less accurate budget, scope, rework, difference in desired quality of project and dissatisfaction of client. With emergence in VR technology it is now possible to get immersed in a full scale interactive environment. VR helps in understanding the entire project as you can walk through every corner of your construction project. The idea of this study was to check if use of VR during semi detailed engineering phase can help in reducing problems caused by lack of proper visualization leading to better cost planning.

For this potential of Immersive visualization was extensively reviewed and the factors that can be controlled using the same in construction projects to improve cost planning were summarized. Along with this input from field professionals and experts were taken to validate the factors, their effects and the improvements made by using VR which were identified from literature. After this 2 real time construction projects were made immersive to check if VR has the capability to reduce the hindrance in project due to lack of visualization. Revit models were created for both projects, individual models for each change. After this VR meeting session was held for each project at NEDUET VRC in which stakeholders of both projects were immersed in their project's models to further validate that VR is capable of improving the factors occurring due to lack of visualization and their effects. For validation from stakeholders' rubric was developed which had 2 sections; first one was about the experience of using VR it had the comparison between 2D visualization conventional method and immersive visualization and second one was about improvement experienced (if any) after immersive visualization during semi detailed engineering phase of a project. Rubric validated that immersive visualization helps in identifying discrepancies and if they are identified at early stages like semi detailed engineering phase it can be fixed before it creates an uncontrollable impact at later stages. This study serves as a knowledge base for implementing VR into construction project scope definition phase to reduce design errors and the impacts of lack of visualization on the cost planning during semi detailed engineering phase.



Reporter
Waleed Ahmed Khan

Content Contributions
Ramsha Ahmed Farooqui

Graphics Designer
Muhammad Wasay Uz Zaman



CONTACT US

Dr. Farrukh Arif

Director - NED University VR Center

Associate Professor

Department of Civil Engineering

NED University of Engineering & Technology

Email: farrukh@neduet.edu.pk, farrukharif@gmail.com

Phone: 0092-21-99261261 Ext: 2277, 2702

<https://vrc.neduet.edu.pk/>



All rights are Reserved by NEDVRC