VR in Focus

Editor
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Newsletter of NED University VR Center

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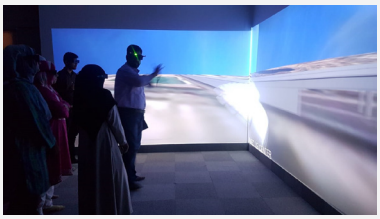
About VRC

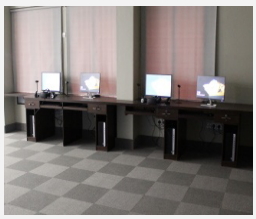
The NED University of Engineering and Technology, Karachi has established a state-of-the art facility for integrating virtual reality in the education, research and practice. The facility that is housed at the Department of Civil Engineering is named as "NED University Virtual Reality Center" is the 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

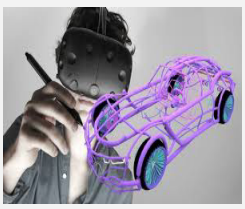
The virtual teaming system is equipped with latest interactive panel, video conferencing and webcasting equipment and software.

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

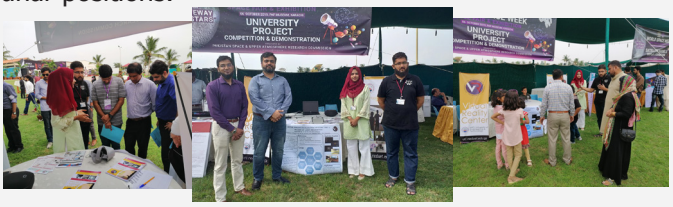
The center is equipped with VR designing and development software, Building Information Modeling platforms, 3D to VR transformation platforms, and VR experience software platforms etc.



Events & Activities

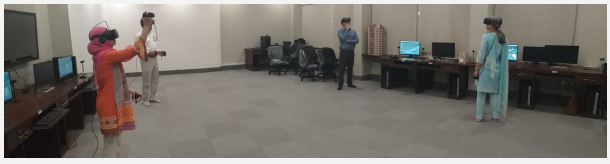
NED Virtual Reality Center's stall at SUPARCO World Space Week University Project Competition and Demonstration October 06, 2019 at PAF Museum Karachi.

The VImagineering program students Wasay, Miqdad and Dua demonstrated project "Virtual Reality Visualization of Ocean Tides and Bulging of Earth Phenomenon" as well as explained the visitors regarding other projects at NED VR Center in this area of science. Heartwarming to see real enthusiasm and encouragement from everyone who visited the stall. More than 300 people visited the stall and got information. The team of virtual reality center presented their model which help in understanding the low and high tide motion of wave in different periods of year with respect to the solar and lunar positions.



Project Stakeholder Meeting in VR-Implementation of Immersive Visualization for Cost Planning During Detailed Engineering Phase-September 2019

Stakeholder meeting in VR! Sounds interesting yet impossible...Not anymore! To reflect this advancement and capability of NED VR Center, a stakeholder meeting for a project at the detailed engineering phase (i.e. Design-Procurement stage) was organized as part of institutional building case study for the Master's student. at the NED University virtual reality center. Architect, Consultant, Client's Project Manager was part of the meeting along with the VR facilitator were immersed in the full-scale model of the building design (Architectural and Structural) using Walking VR systems. The stakeholders were walked through the model by the facilitator and stakeholders identified changes, errors and revisions within the model in the VR environment. The stakeholders provided excellent feedback to the use of immersive technology intervention.



Events & Activities

Vimagineering Program

4 students from different departments completed apprenticeship under the NED VRC "Vimagineering" program that is envisioned top but intern-cum-apprenticeship. Internees were required to work on an assigned pilot projects in the area of Space sciences, and Aeronautical Sciences in 4 weeks' time. Ms. Dua and Mr. Miqdad worked on "Virtual Reality Visualization of Ocean Tides and Bulging of Earth Phenomenon" while, Mr. Rafay and Mr. Ehasan worked on development of "Flight Simulator."

Guest Lecture at Baluchistan University of Information Technology, Engineering and Management Sciences (BUITEMS)

Dr. Farrukh Arif delivered guest lecture titled "Application of Immersive Visualization in Civil Engineering" at Baluchistan University of Information Technology, Engineering and Management Sciences Quetta December 16, 2019.

Vimagineering Certificate Distribution Ceremony-December 23, 2019.

Certificate Distribution Ceremony-Vimagineering Program of NED VR Center. The honorable Vice Chancellor NED University Dr. Sarosh H. Lodi awarded Vimagineering (Virtual Imagination for Engineering) Apprenticeship Program certificates to the students and graduates of different universities on December 23, 2019. The students joined and completed their Vimagineering Apprenticeship in 2019 at different times during the year. Students were mentored to conceptualize ideas and convert it into Virtual Reality applications. These included Airplane simulator, Drone Simulator, Lunar Positioning impacts on High tide low tide phenomenon, Building Virtual Reality Visualization. The students participated were from NED University, PAF KIET, FAST-NUST etc.

Experience VR! Visits

Visit by Jinnah University for Women

Students of Department of Computer Science and Software Engineering from Jinnah University of Women visited NED Virtual Reality Center under the "Experience VR!" Program of the VR Center. The students were briefed about different projects and visualizations developed at the center by Dr. Farrukh Arif.

Visit by Agha Khan College

Students from Agha Khan College visited NED Virtual Reality Center under the "Experience VR!" Program of the VR Center. The students were briefed about different projects and visualizations developed at the center by Dr. Farrukh Arif.

Visitors' Gallery

Team of organization providing Global technologies and services visited VRC along with Pro Vice chancellor, NED University Dr. Muhammad Tufail

High Level Team from Digital Technology company " Digitrends'" visited VRC

Team from Navy Research and Development Institute (NRDI) Visited VRC

On Going Projects

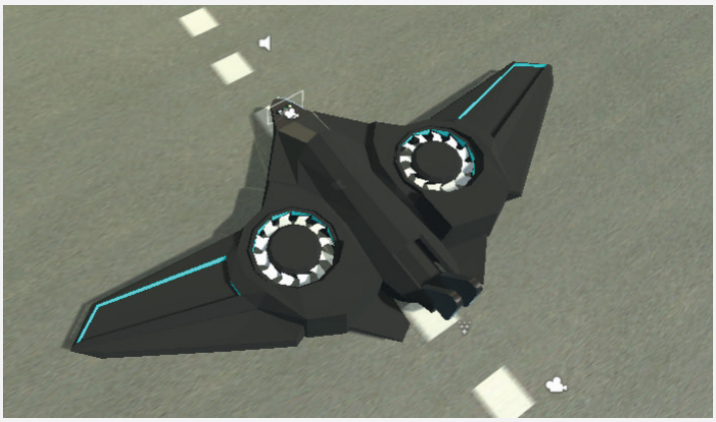
1. Development of Drone Simulator for Drone Pilot Training.
2. Virtual Patient Simulator.
3. Projection VR model of a prototype sustainable town.
4. Driving License Test Simulator.

Project Showcase

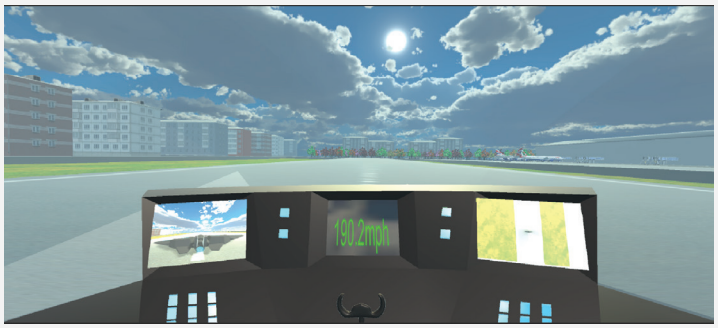
The technology of virtual reality is a prevailing and a distiguishing technology and acting as a helping hand in every field of science and platform of knowledge. Virtual Reality can play a vital role in the training without any impairment or damage to the physical equipment using simulation providing cognitive and psychomotor environment.

AirSim is a virtual reality flight simulator that helps in understanding the working of an aircraft. It uses mixed reality to simulate an aircraft's behavior. Moreover, it simulates the experience of flying an aircraft to the player. The basic movements like roll, yaw and pitch are built into the application. Players take the aircrafts off at standstill and maneuver it around an island. The aircraft then, has to be landed. The aircraft is limited to flying inside the island limits. The simulator simulates the behavior of an aircraft at standstill and also at speeds up to Mach 2.2.

The objective of building such a simulator was to understand the working and dynamics of an aircraft. It is a cost effective solution to building expensive physical flight simulators. Flight simulator containing a map which give the high cognitive feeling while experiencing it in virtual reality. likewise, Fog is added to minimize the objects in visible range, and to give the simulation a procedural generation effect and a fighter jet having a cockpit view that contains yoke for controlling the movement of aircraft and two auxiliary screens 1 is showing the radar view of the map and the other showing a view from the back of the aircraft.



The pilot can perform aggressive maneuvers within the city and is also able to do a 360 barrel roll. The pilot can also adjust the line of sight for better viewing angles. Take-off and landing has to occur at speeds up to 180 miles an hour. Accelerate further without taking-off, higher is the probability for the plane to unsettle its aerodynamics and to crash.



The simulation can be used to study the aerodynamics of an aircraft and can be modified to test the aircraft's behavior in harsh and close to unflyable conditions. It can also be used to train novices for airplane flights, if required. Furthermore, it can also be modified to a VR game by adding some game mechanics like point scoring, etc.

What's Happening in VR World?

2019 was the year of VR development, so many new uses of VR were discovered. The latest use of VR was seen in All Nippon Airways (ANA) a Japanese airline which has been using the newest VR technology developed by NEC corporation. The airway is using this facility for the training of its flight attendants. The basic purpose of this training was to prepare the staff for the emergency scenarios. According to ANA this initiative will help the attendants to think creatively in the time of crisis.
Hitomi Yamamoto, Executive Vice President of ANA said, "VR opens the doors to emergency training scenarios that we were previously unable to address in an interactive manner due to safety concerns, instead of learning how to address these situations from a textbook in the classroom, flight attendants will be able to combat dangers in real time through accurate VR recreations." For more facts read the full story in the link given below.

https://www.ana.co.jp/group/en/pr/201903/20190320.html

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.

Vimagineering 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.

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