

School of Technology, Pandit Deendayal Energy University, Gandhinagar

Event Report

1. **Name of Event:** Training on Unity Real-Time 3D fundamentals and Basics of AR-VR Technology
2. **Name of Speaker(s)/Resource Persons (with Contact Details):**
Speaker: Mr. K. Rameshkumar, Technical Manager in XR division, ARK Infosolutions Pvt. Ltd. (E-mail: ramesh87.amrita@gmail.com, Contact no: 8792525276)
Resource person: Mr. Pankaj Jadhav, Head in XR division, ARK Infosolutions Pvt. Ltd. (E-mail: pankaj.jadhav@arkinfo.in)
3. **Dates of the Workshop:** 21-23 Dec., 2022
4. **Time/Duration of the Workshop:** 3 days (9:30 AM to 4:30 PM , total 21 hours)
5. **Department/Centre Hosting the Workshop:** Faculty of Engineering and Technology
6. **Coordinators of the Workshop:** Dr. Shakti Mishra (CSE dept.), Dr. Shivangi Surati (CSE dept.)
7. **Mode of Delivery:** Offline
8. **Hand-On:** Yes
9. **Target Audience:** Internal
10. **Number of Participants:** **Internal (27)** **External (0)**
11. **Theme of the Workshop:**
 - Understanding the requirements to develop an AR/VR Application using Unity 3D.
 - Experience the AR/VR Application.
 - Understand AI mechanism and implementation
 - Demo on creating 2D and 3D Applications.
12. **Details of Speaker:**

The speaker has professional qualification of MCA in Computers & Gaming applications having 10+ years of working experience in education and industry in the domain of Game Development, Gamification-Learning, Unity3D, AR, VR, and Computer Graphics. He has conducted 60+ hands on trainings/ workshops in Unity and Gaming applications as well as Training & Certification programs in Unity for academia and Industry users. His Hands on experience in **Game production** includes Design, Architect, Development & localization.

He is working closely with industry and academia to enable the students ready with skills and competencies in the domain of AR, VR, Gaming and serving as external consultant / Member for BoS in various private and government institutions.

13. Summary of the Workshop:

The event was specially organized for the faculties of FoET, PDEU. The inaugural function is conducted on 21st Dec., 2022 at 9: 30 am in presence of following members:

Dr. S. Sundar Manoharan sir, Director General, PDEU, Prof. Dhaval Pujara sir, Director, SOT, PDEU, Dr. Anirbid Sircar, Director, SOET, PDEU, Dr. Surendrasingh Kachhawaha, Dean SOT, PDEU, Mr. Pankaj Jadhav, Head of XR division, ARK Infosolutions pvt. Ltd., an invited expert Mr. K Rameshkumar, Technical Manager in XR division, ARK Infosolutions pvt. Ltd., Dr. Shakti Mishra, Associate professor, CSE department and coordinator of the event and faculty participants.

After that, Mr. Rameshkumar introduced AR-VR technologies that was followed by discussion about gamification. The applications of these technologies in the domains of healthcare, mechanical machinery, training and business improvement were explored by him. Introduction is followed by unity engine information, creation of new project with basic objects (camera and directional light), explanation about different windows/scenes. The textures, materials and transformations (translate, rotate and scale) are explained in next two sessions. In last session, the introduction of C# script and it's basic functions (start() and update()) are introduced and variations in objects through this script file is explained in detail. Thus, day-1 brought into the interest of the participants in various activities related to C# coding and its impact on the project.

On day-2, first session was online conducted by the resource Mr. Ayappa, Technical Manager, Fusion VR. He explained about rendering techniques – how scene is created in unity and about light illumination- how to change light effects in real time. To make the session more interesting, the expert demonstrated input controller to perform transformations using key presses. Continuing the topic in third session, collision of objects and destruction of single/multiple objects (via tags) are executed through input controller. Then the expert introduced mixamo.com website to download the animated characters for the game and how to change their states in the game. Lastly, all participants created a project by downloading and importing the characters of their choice, setting textures and materials for them and by giving transformations as well as state changes.

Third day began with the demo of the machine applications created by the company. The participants experienced the virtual travel of a factory and picking ball activity in the virtual factory was carried out by the participants. Next, the participants learnt to create an application using free inbuilt environment (prefab), modification in this environment, addition of objects & characters in them and execution of the same.

14. Feedback:

PARTICIPANTS' FEEDBACK FORM

Name (optional): _____

1. Delivery of contents from experts

Excellent Very Good Good could have improved

2. Relevant with future goals

Excellent Very Good Good could have improved

3. Practice given in hands-on session

Excellent Very Good Good could have improved

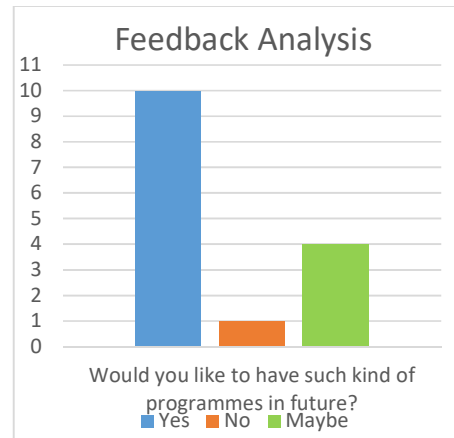
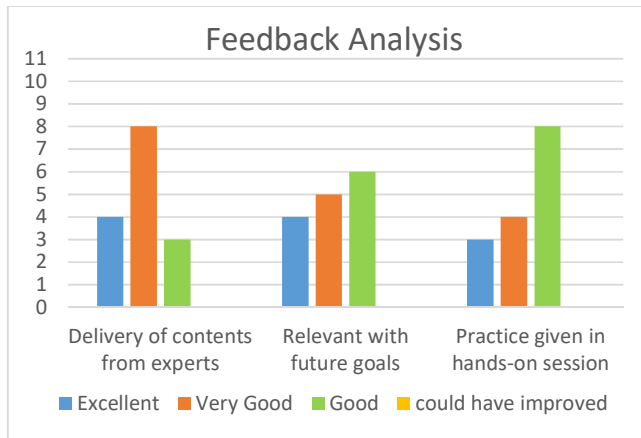
4. Would you like to have such kind of programmes in future?

Yes No May be

5. Mention three application areas where you can apply these technologies

6. Any other comments regarding the Training.

Q-1 to 4:



Q-5: Mention three application areas where you can apply these technologies:

animation of wave propagation, wave guide modes and Radar
It can be applied for game development, augmented reality experience, training students. Can be used for laboratory experiments however it requires high end programming and designing knowledge.
Technical Modelling, Interactive environment design and Game development
Disaster Management, Medical, Teaching
These can be applied to demonstrate design of a particular product and providing a GUI based explanation of some concept.

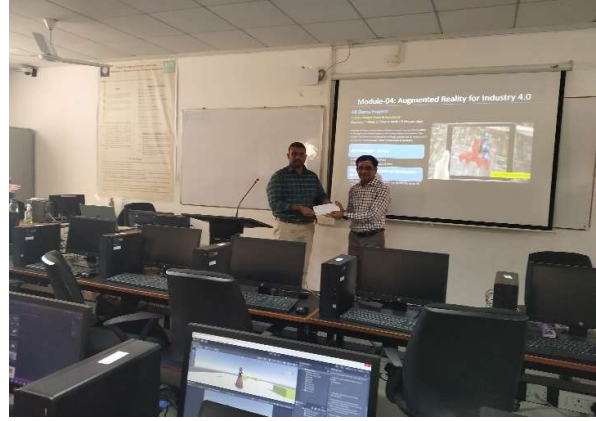
Healthcare, Machinery, Training and Business
1. UAV-based monitoring system, 2. Smart home system, 3. IoT in smart city
Game development
Health care domain, Education domain, Entertainment applications
1. Virtual Tour of Industries. 2. Virtual hands on practice on machines and setups. 3. Virtual practical tests
1. Healthcare Training, 2. Open-house education program for admission of new aspiring students, 3. Virtual Trial Room
Surface production operations (Petroleum Engineering), Artificial lift (Petroleum Engineering), HSE
Machine vision
It's more for students project work. Research possibilities are very limited. Unity software is restricted with c# framework which is a constraint for most new developers.
Energy-related: 1) Digital Twin for sub-sea pipelines 2) Digital Twin for oil and gas production systems 3) AR-VR-MR technology for Geothermal visualization

Q-6: Any other comments regarding the Training.

more time should have been given.
Needs to be planned properly. The external agency must give details in advance. Session-wise details must be provided. The online lecture was of no use however, the offline trainer was good and explained well. The doubts were also cleared. More time is required for such course for better impact. More relevant for CS and ICT students looking for building future in designing and game development.
Practice material was good and instructor was very helping.
Notes could have helped in more efficient communication and training
The training was up to the mark.
This is a good hand-on session for students. I would like to request the organizing committee to arrange such workshops for the students.
This training covered only the fundamentals of AR. Most of the contents mentioned in the training curriculum have not been explored.
It should be of minimum five days.
While the instructor did a great job of explaining the concepts and technologies involved in AR, VR, and MR, I felt like there wasn't enough time to really dive into the practical applications of these technologies. It would have been helpful to have more hands-on opportunities to experiment with the technologies and see how they can be used in real-world situations. Overall, I would recommend the workshop to anyone who is interested in learning more about AR, VR, and MR, but I would also suggest that the organizers consider adding more sessions and hands-on activities to provide a more credible outcome for attendees.
If training program could be video recorded that would be really helpful for future purpose.
It would be better if the software is installed in the laptop, followed by the training. A full cycle needs to be done step by step so as to understand it at a fundamental level. Thank you so much for the opportunity extended.
Hands-on can be more intensive.
Equipment is required for doing some robust work.
Good initiative

15. Photographs of the Workshop:





Dr. Shakti Mishra (CSE dept)

Coordinator