# DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

## REPORT FOR 2 DAY HANDS-ON WORKSHOP ON "BUILDING XR APPS"

**Title: 2 Day Hands-on workshop on "Building XR Apps"**

**Date: 29th and 30th July 2025**

**Time: 9:00 AM – 3:30 PM**

**Venue: Intel Lab, AVIT, Chennai Campus**

**Organized By: Department of Computer Science and Engineering & XR Spectra Club**

**Resource Person:** Mr. ASHOKKUMAR MANISEKARAN, Entrepreneur, Founder, Developer & Educator at Praya Labs and Director | Founder - Funobotz Paper Robotics Pvt. Ltd.(Startup), Tiruvannamalai, Tamil Nadu, India

**Target Audience: Students of the Department of Computer Science and Engineering**

**Category: Silver Jubilee Celebrations**

### Objective of the Workshop

The primary objective of the 2-day hands-on training program on "Building XR Apps" was to equip students and faculty with fundamental and intermediate-level skills in the development of Augmented Reality (AR) and Virtual Reality (VR) applications using industry-standard tools. The workshop aimed to introduce participants to real-time development environments like Unity 3D, programming in C#, and device-specific deployment practices using tools like Vuforia and Oculus Quest 2, thereby bridging academic learning with current XR industry trends.

### About the Session

**Day 1 – 29th July 2025**

1. Inaugural Ceremony

Welcome Address by Dr. S Balakrishnan, Professor & Head of the Department, CSE

Introduction to the XR Spectra Club by Dr Muthukumaran M / Professor/CSE

2. Unity Installation, Setup, and Basics

Installation and configuration of Unity Hub and Unity Editor

Overview of Unity interface, components, and scenes

Basics of GameObjects, Components, Prefabs, and Asset Management

Introduction to XR plugins (AR Foundation, Vuforia Engine)

3. Introduction to C# Scripting and Input Systems

Basics of scripting in Unity using C#

Writing custom scripts for object control and animations

Input system overview (mouse, keyboard, touch, gaze, controller)

Creating interactive elements using scripts

4. Marker-Based AR Development

Introduction to marker-based tracking with Vuforia

Creating AR experiences using image targets

Assigning 3D models to markers

Live demonstration on mobile deployment and interaction

5. Marker-less AR

Introduction to AR Foundation for marker-less tracking

Implementing plane detection and object placement

Scene scaling, lighting, and object manipulation

Use of Android/iOS devices for real-time testing

**Day 2 – 30th July 2025**

6. Virtual Reality Development with Oculus Quest 2

Introduction to standalone VR systems

Setting up Oculus Quest 2 for Unity development

Device pairing, permissions, and developer account setup

Safety and design considerations in immersive VR

7. Introduction to VR Development and Environment Setup

Creating immersive environments in Unity

Using 3D assets to simulate real-world scenes

Understanding 360-degree spatial design

Skyboxes, teleportation, and spatial audio

8. VR Input System and Interactions

Integration of Oculus SDK and Input Manager

Programming interactions with VR controllers (grabbing, throwing, teleportation)

Triggering events and animations

UI design and interaction within VR space

9. VR Optimization and Deployment

Scene optimization for performance (draw calls, occlusion culling, lighting)

Reducing lag and ensuring high frame rates

Building APKs and deploying to Oculus Quest 2

Troubleshooting deployment issues and debugging live demos

**Key Takeaways for Students**

The 2-day hands-on training on "Building XR Apps" provided participants with a comprehensive understanding of Extended Reality technologies through a balanced blend of theory and practical sessions. By exploring both Augmented Reality and Virtual Reality development using tools like Unity, Vuforia, and Oculus Quest 2, attendees gained real-world insights into creating immersive digital experiences. The training fostered confidence in C# scripting, input systems, and cross-platform deployment techniques. Ultimately, the program sparked curiosity and innovation among participants, encouraging them to explore XR beyond the classroom and apply their learning in research, project development, and industry-relevant applications.

**Outcomes**

The 2-day hands-on training on "Building XR Apps" provided participants with a strong foundational understanding of Extended Reality technologies, focusing on both Augmented Reality (AR) and Virtual Reality (VR). Through guided sessions on Unity installation, C# scripting, marker-based and marker-less AR development, and VR deployment using Oculus Quest 2, students were able to apply their theoretical knowledge to practical, real-world scenarios. This outcome directly maps to Course Outcomes CO1 and CO2, as students demonstrated competency in using modern XR development tools (mapped to PO1 and PO2) and programming interactive features using C# (PO3). The AR and VR modules enhanced their

ability to design and develop immersive applications, satisfying CO3 and CO4, and aligning with PO5, which focuses on modern tool usage. Furthermore, collaborative project development during the final session encouraged teamwork and effective communication, aligning with CO5, and mapping to PO9 and PO10. The exposure to real-world applications of XR in healthcare, education, and other industries helped students understand the broader impact of technology on society, fulfilling CO6 and addressing PO6 and PO7. Overall, the workshop bridged academic learning with industrial relevance and inspired students to pursue innovative XR-based solutions.

Coordinator HoD/CSE

**Flyer of the Event**


Building XR Apps


Building XR Apps


AVIT
Building XR Apps


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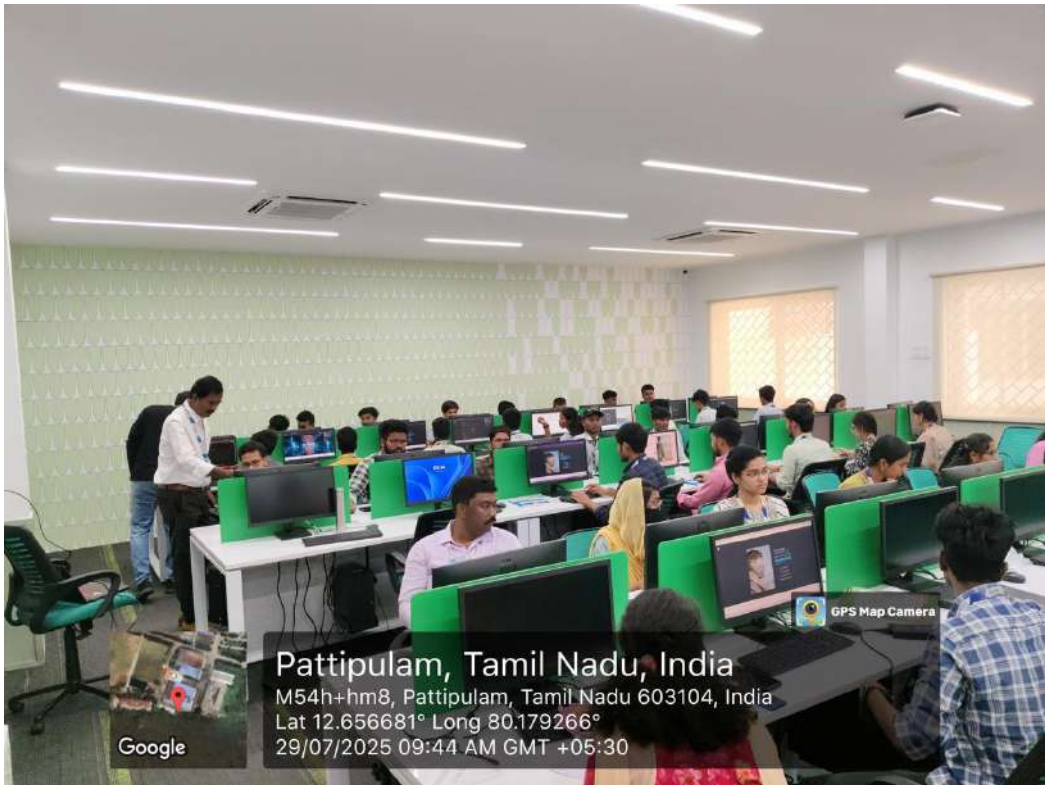
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EXPERIENCE AUGMENTED REALITY


EXPERIENCE AUGMENTED REALITY
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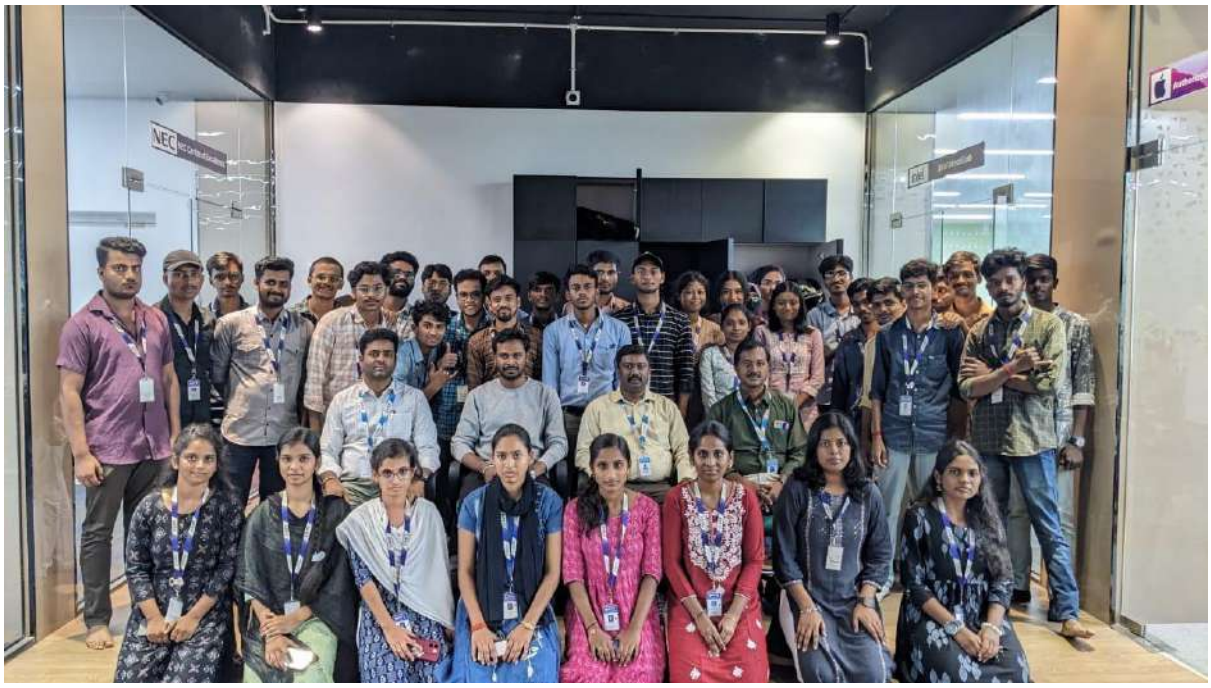
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