AUGMENTED AND VIRTUAL REALITY

Welcome to the captivating realm where reality meets imagination, the digital and physical intertwine to create experiences beyond the ordinary. Augmented Reality (AR) and Virtual Reality (VR) are two groundbreaking technologies that have revolutionized the way we perceive and interact with the world around us.

AUGMENTED REALITY (AR)

Imagine a world where the boundaries between the real and virtual seamlessly blend. AR is the technology that makes this vision a reality. It overlays digital information, such as graphics, sounds, or other sensory inputs, onto the real world. This augmentation enhances our perception of reality by adding an extra layer of interactive, computer-generated content.

VIRTUAL REALITY (VR)

Step into a realm where the boundaries of the physical world fade away, replaced by immersive digital landscapes. VR transports users to entirely virtual environments, shutting out the external world and immersing them in an alternate reality. VR applications are wide-ranging, from gaming and entertainment to simulations, training, therapy, and beyond, allowing individuals to explore places and scenarios that were once confined to the realm of imagination.

COURSE OBJECTIVE

- Distinguish between Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality (MR) technologies.
- Navigate the Unity interface and manipulate objects within a 3D scene.
- Understand and apply basic C# programming concepts for Unity development.
- Develop a basic AR experience using Vuforia.
- Create a simple VR scene using A-Frame and understand web-based VR applications.
- Collaborate in teams to design and present a basic immersive reality project.

METHODOLOGY

The content will be delivered through lectures/ presentations as well as interactive sessions. Apart from C-DAC faculty, distinguished Guest speakers would include eminent experts from Academia, Scientific community, and Government Organizations. A local field visit would also be organized and feedback session will be part of the course methodology.

TARGET GROUP

The Scientists/ Technologist (Group-A only) holding scientific posts/ working in Scientific Ministries/ Departments of Govt. of India and State Governments, Autonomous Institutions/ Public Sector Undertakings of Central/ State Governments, Research and Development Institutions/ Research Laboratories of Central / State Governments, Central/ State Universities, State Science & Technology Councils. The Scientists and Academicians (only Ph.D./ M.Tech Degree holders) from Central and State Universities, Educational Institutions & Colleges, engaged in R&D in any discipline of Science & Technology are also eligible.

- Group 'A' officer serving in Govt. organization.
- The upper age limit is 58 years on July 1, 2023.
- Number of years of service as Group 'A' scientist - 05 years and above.
- The nominations shall be accepted as per DST guidelines.

VENUE OF TRAINING

The one-week residential training programme is planned to take place at the Centre for Development of Advanced Computing (C-DAC) in Mohali, Punjab. The program is sponsored by the Department of Science & Technology, Govt. of India, New Delhi.

BOARDING AND LODGING

- Participants will be provided with Hotel or Guest House accommodation during the training period.
- Participants are responsible for any overstay expenses incurred before or after the training period, as well as any costs associated with their personal visits.

BATCH SIZE

The programme has a limited intake capacity of 25 participants, and their admission will be based on the criteria outlined in the Training Guidelines set by the Department of Science and Technology (DST), Govt. of India.

FEE / SPONSORSHIP

The programme is sponsored by the Department of Science and Technology (Government of India), and participants will not receive any Travel Allowance (TA) or Daily Allowance (DA). However, all expenses related to the training program, including Fees, Food, Accommodation, and Local Transportation, will be covered by the DST, except for the costs of the participants' travel from their place of duty to C-DAC, which will be borne by the sponsoring organizations.

Training Session Plan
Four Sessions per day 19th Feb – 23rd Feb, 2024

DAY 1

Introduction to AR, VR, Mixed Reality, and Unity
Explore the differences between AR, VR, and Mixed Reality.
Get acquainted with the Unity interface and its relevance in immersive reality development.
Understand the potential applications and impact of AR and VR technologies.

DAY 2

Introduction to C# and Game Objects
Learn the basics of C# programming language, focusing on its significance in Unity development.
Discover the concept of Game Objects and their roles in creating interactive experiences.

Hands-on exercise: Create and manipulate simple objects within a Unity scene.

DAY 3

Overview of Vuforia and AR Development
Dive into the world of Augmented Reality with an overview of Vuforia, a popular AR development platform.
Learn how to integrate Vuforia into Unity projects.
Practical session: Develop a basic AR experience using Vuforia.

DAY 4

Overview of A-Frame and its Applications
Introduction to A-Frame, a web framework for building Virtual Reality experiences.
Explore the potential of web-based VR applications and their accessibility.
Hands-on: Create a simple VR scene using A-Frame.

DAY 5

Project Work and Presentations
Apply the knowledge acquired throughout the week to a practical project.
Work in teams to develop a basic VR or AR game using Unity, Vuforia, or A-Frame.
Conclude with project presentations and sharing of experiences.

Internal Resource Persons

1. Sh. VK Sharma (Centre Head)
2. Dr. Suneet Madan (Joint Director and Training Coordinator)
3. Sh. Ajay Mudgil (Joint Director and Nodal Officer)
4. Dr. Manjit Kaur (Joint Director and Program Coordinator)
5. Smt. Amritpal Kaur (Senior Technical Officer)
6. Smt. Himani (Project Engineer)

Eminent speakers from Academia, Scientific community, and Government Organizations & Industry may be imparting knowledge by sharing their experiences as per their availability.

How to Apply

The nominated officers should register and apply online for this training programme at the DST's training portal i.e *https://training.dst.gov.in* and follow the instructions/ steps contained therein.

For any further details, applicants can also contact
Ajay Mudgil (Nodal Officer - DST Trainings),
C-DAC, A-34, Industrial area, phase-8, Mohali-160071
Ph. No- 0172-6619000, 2237052-55
eMail : ajay@cdac.in, dst-trg@cdac.in

FACILITIES

Library

The Library has well rounded collection of books and Periodicals/ Journals. These include text books, foundation books and books for subsidiary readings. Institute has access to digital library resources also.

Labs

There are many labs under different divisions for example: iOS MAC Lab, Embedded Systems Lab, VLSI Design Lab, Telemedicine, Cyber Security, Advance Network Engineering Lab, FOSS Lab, Multilingual Lab, Multi-Media & Web design, IT For Masses Lab, Workshops etc. These Labs are equipped with PC's, Servers (i5 / i7 Latest Configuration), IT hardware, Software and each system is connected with LAN. Class rooms are equipped with LCD projector.

Auditorium & Conference Room

The Centre has an AC Auditorium with capacity to accommodate 100+ persons. The auditorium is fitted with audio-visual equipment. The conference room has a capacity to accommodate 30 persons.

Sponsored by

Department of Science & Technology, Govt. of India, New Delhi

Organised by

Centre for Development of Advanced Computing (C-DAC), A-34, Phase VIII, Industrial Area, Mohali, Punjab, India

ABOUT C-DAC

Centre for Development of Advanced Computing (C-DAC) is the premier R&D organization of the Ministry of Electronics and Information Technology (MeitY, Govt. of India) for carrying out R&D in IT, Electronics and associated areas. C-DAC has today emerged as a premier R&D organization in IT&E (Information Technologies and Electronics) in the country working on strengthening national technological capabilities in the context of global developments in the field and responding to change in the market need in selected foundation areas.

As an institution for high-end Research and Development (R&D), C-DAC has been at the forefront of the Information Technology (IT) revolution, constantly building capacities in emerging/ enabling technologies and innovating and leveraging its expertise, caliber, skill sets to develop and deploy IT products and solutions for different sectors of the economy, as per the mandate of its parent, the Ministry of Electronics and Information Technology, Ministry of Communications and Information Technology, Government of India and other stakeholders including funding agencies, collaborators, users and the market-place.

C-DAC, Mohali operates from its own impressive building having a covered area of approximately 4300 sq. mts. The centre is engaged in design and deployment of world class IT and electronics solutions in the following domains:
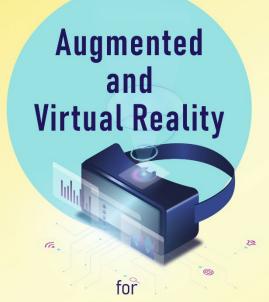
- Health Informatics
- Multilingual Technologies
- Artificial Intelligence
- Software Technologies
- Cyber Forensics and Security
- Quantum Computing
- Augmented & Virtual Reality

Centre continues to play a leading role in human resource development and training in Information Technology (IT) & Electronics sector in the northern region. From year 2020, C-DAC Mohali is also conducting M.Tech in CSE (Artificial Intelligence), M.Tech in CSE (Cyber Security) and M.Tech in Embedded Systems. Short term value added courses and diploma are designed for knowledge based skill development. It also offers courses for foreign participants, sponsored by MEA under ITEC/SCAAP programs. The Centre is certified for ISO 9001:2015 standard.

Augmented and Virtual Reality

for

Scientists and Technologists working in Government Sector

19th Feb – 23rd Feb, 2024

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Centre for Development of Advanced Computing (C-DAC), A-34, Phase VIII, Industrial Area, Mohali, Punjab, India