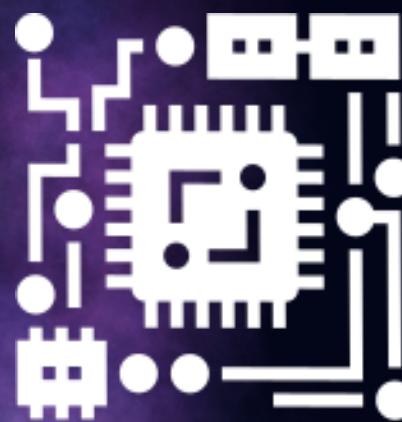




DESE



OPEN DAY

2025

*Brochure*

**DATE**

**1ST MARCH, 2025**

**LOCATION**

**DESE, IISc**



# ABOUT DESE

## Formerly (CEDT)

The Department of Electronic Systems Engineering (DESE), formerly CEDT, was established in 1974 with a vision to achieve excellence in research and education in electronic systems engineering while making a positive societal impact. The department focuses on training engineers and fostering collaboration with the electronics industry in India.





# OPEN DAY

- IISc's Open Day is an annual event designed to inspire scientific curiosity in people of all ages. On this day, the institute opens its doors to the public, offering a glimpse into cutting-edge research and innovations.
- With **40+ departments** showcasing their work through demonstrations, talks, and exhibitions, visitors can explore a wide range of academic and industry-partnered projects. Industrial collaborators from across the country will also be present for interactions.





# HIGHLIGHTS

- One of India's **Largest Science Conclave**
- Footfall of around **1 lakh+**
- Main Events, **Live experiments**, Scientific Demos



- Meet the **Innovators**
- Industry insights and Tech Talks
- Introducing **Line Follower Contest** this Open Day 2025



# HIGHLIGHTS

- Demos that spark curiosity and inspire the next generation of **Innovators**



- Developing Solutions to Tackle Real World Challenges -  
**Driver Assistant System, TCAS**

- Insight into cutting-edge technologies shaping the future -

**Aryabhat chip**



- Cutting-edge labs for pioneering innovation, research, and development of **next-gen sensors and devices**



# LINE FOLLOWER CONTEST

The Line Follower Robot (LFR) Contest challenges participants to design and develop autonomous robots that navigate a predefined path using sensors and intelligent control algorithms. This competition emphasizes precision, speed, and real-time decision-making, fostering innovation in robotics and embedded systems.

**The ultimate line-following robot challenge, where precision meets innovation!**

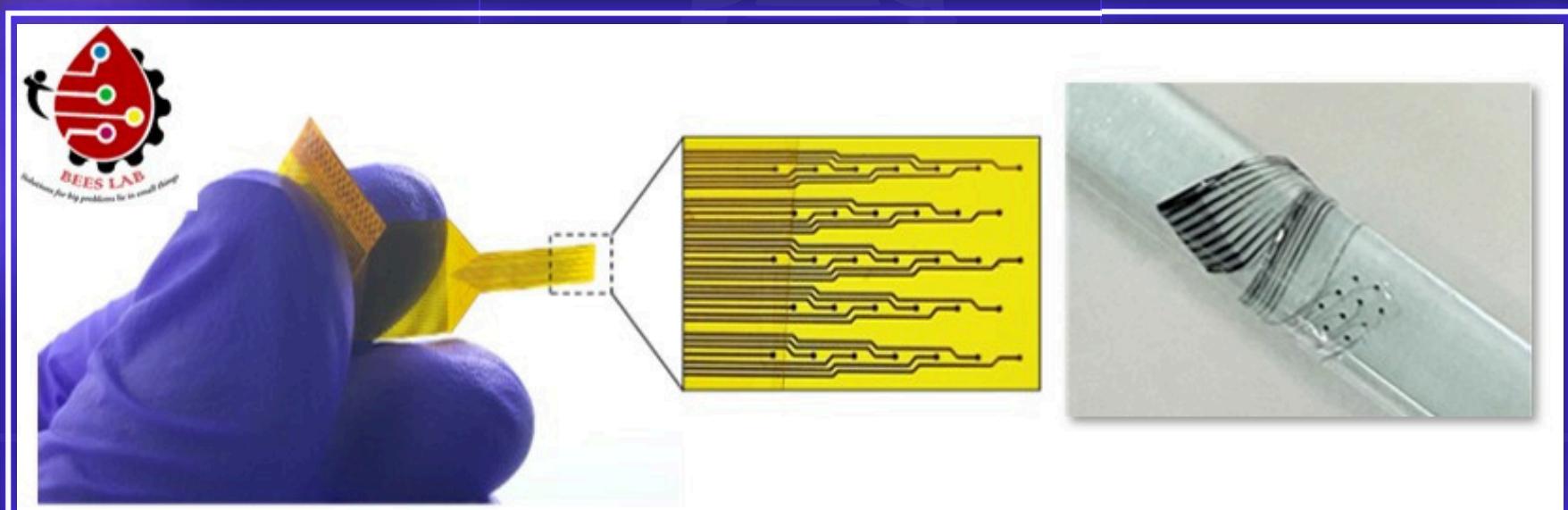
- **Eligibility:** For **Non – IISc students only** with qualification up to master's or equivalent
- **Difficulty:** Moderate to Advanced
- **Prize pool:** **50k**
- **Opportunity for Internship** at DESE, IISc



## LIVE DEMOS

### 1. Indigenous fabrication of flexible neural implants

These indigenous fabricated flexible neural implants can be used to treat Parkinson's disease in rat models.



### 2. Polarization-based Optical system for Heart Tissue Characterization

This optical system enables real-time, precise characterization of healthy and fibrotic myocardial tissues, improving cardiac diagnosis and patient outcomes.



## LIVE DEMOS

### 3. E-Security guard

- The E-Security Guard project integrates facial recognition and email OTPs for secure and efficient department access control, enabling door access via camera and microphone inputs.



### 4. Haptic navigation

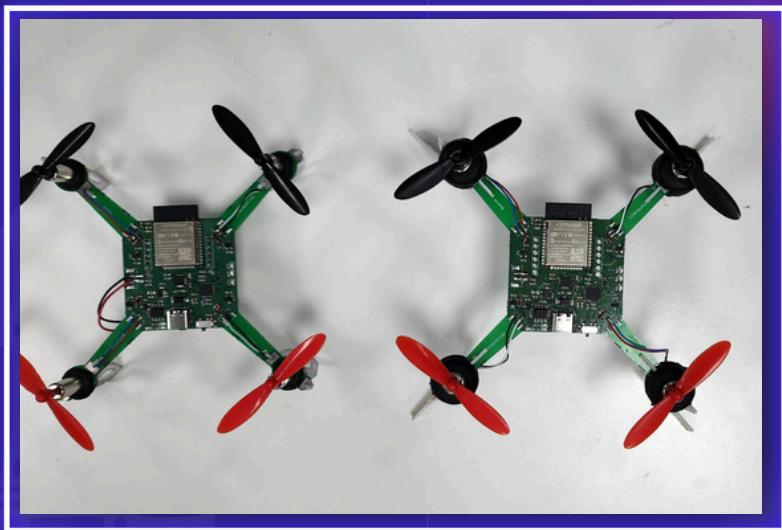
- This project explores haptic feedback integration in wearable and cabin devices to enhance airplane wayfinding, improving accessibility and passenger experience.



## LIVE DEMOS

### 5. Drone

Design and development of an unmanned aerial vehicle for various applications such as surveillance, delivery, or monitoring.



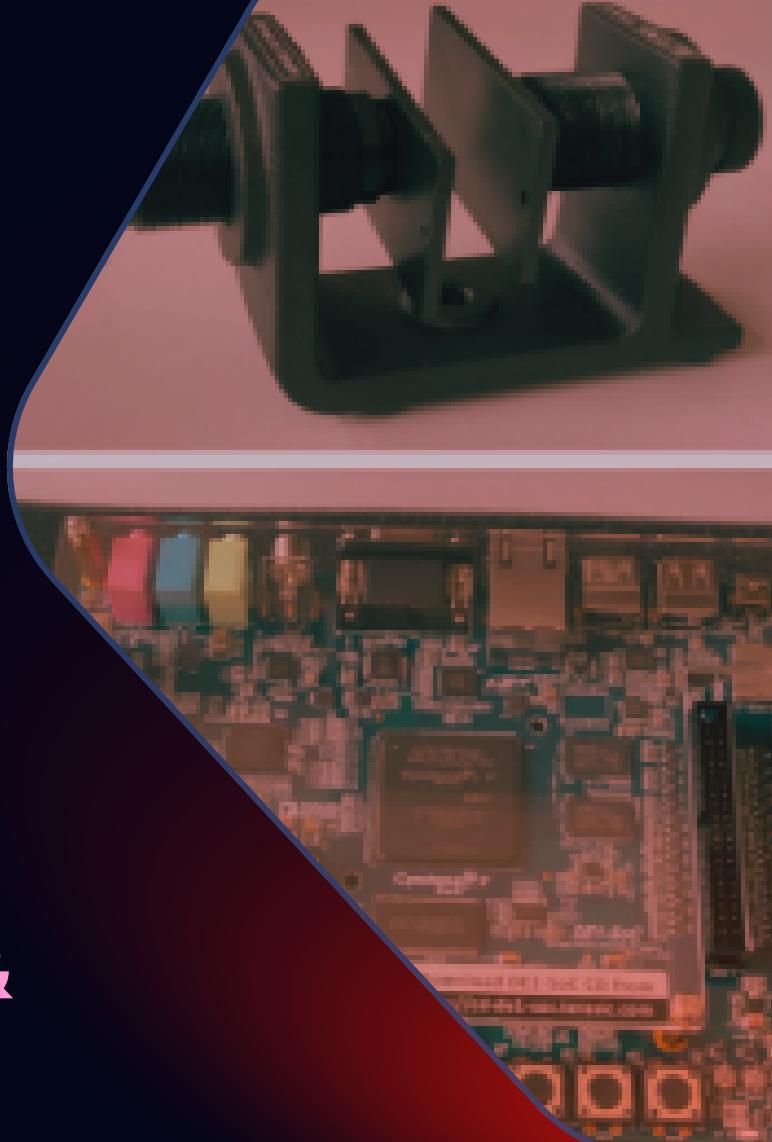
### 6. Maze Runner: Robotic Maze Navigator

A robotic car navigates a maze, overcoming obstacles and collecting rewards along the way to reach its goal.



### 7. Chess Playing Robot

The Automatic Chess Board with Robotic Arm uses image processing and AI to track the game and direct a robotic arm for precise moves, enhancing the gameplay experience.



## LIVE DEMOS

### 8. Side-Channel Analysis & Countermeasures



This project aims to assess vulnerabilities and develop countermeasures to protect devices like microcontrollers, FPGAs, and ASICs from side-channel attacks.

### 9. ML-based classifier for the IoB

The Internet of Bodies (IoB) uses wearables to collect signals like ECG and EMG, enabling applications such as emotion detection and touchless gesture controls



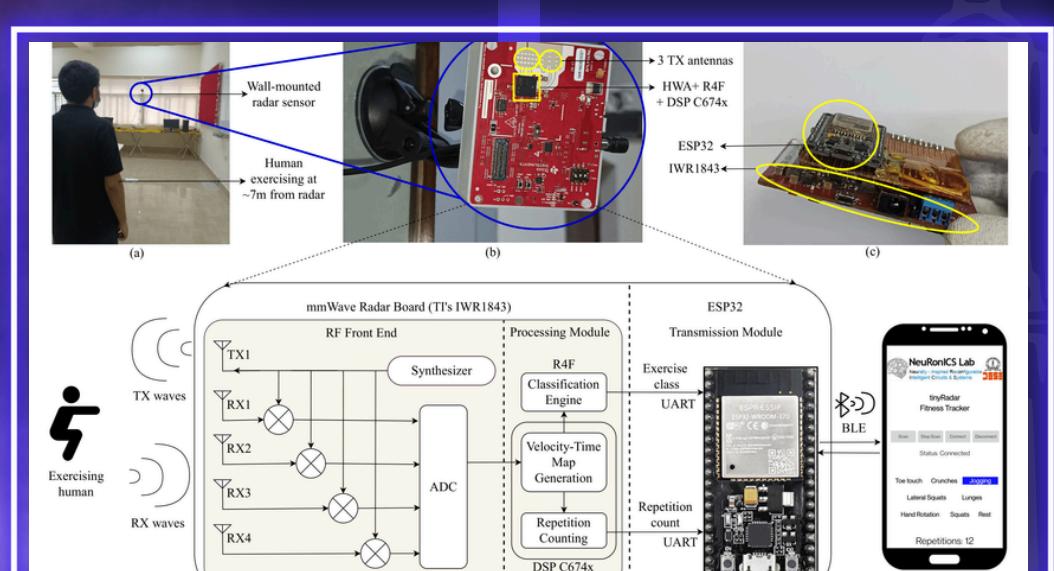


OPEN DAY  
2025  
*Brochure*



## LIVE DEMOS

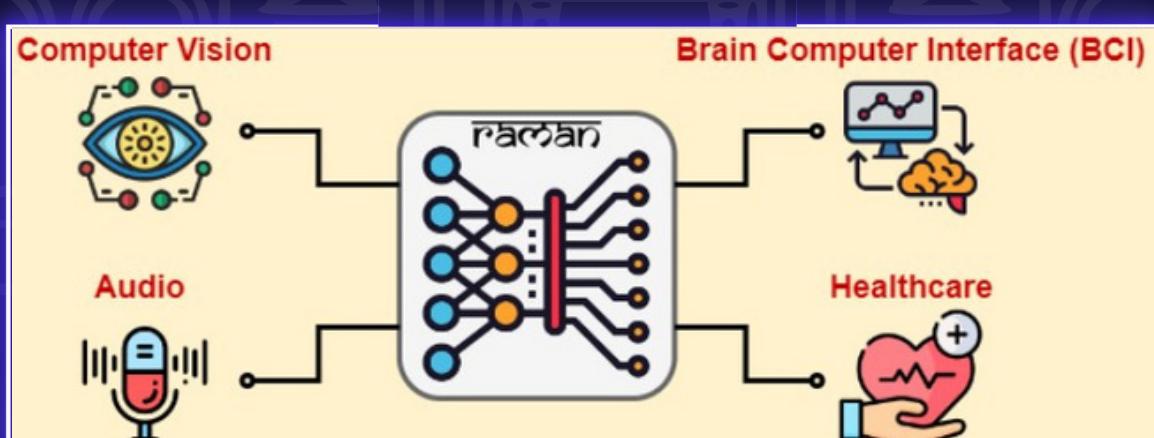
### 10. Gesture Recognition using mmWave Radar



An AI-enabled mmWave radar uses neuromorphic signal processing and machine learning to classify gestures into push-pull, left-right, up-down, and others.

### 11. Real-time audio and video inference using RAMAN TinyML Accelerator

This demonstration showcases real-time audio and image classification using the RAMAN TinyML accelerator, optimizing edge inference with quantization and sparsity.





## LIVE DEMOS

### 12. Solving Graph Max Cut with FPGA Acceleration

This project leverages probabilistic computing with a 2048-node system, pc-COP, on a Xilinx UltraScale + FPGA to efficiently solve the max-cut optimization problem.

### 13. Van de graff generator

A demonstration of static electricity, showcasing its effects and principles.

### 14. Energy Internet

The Energy Internet enables real-time, bidirectional energy flow in packets across a decentralized network, similar to data transfer on the Internet.

### 15. TYLOR

TYLOR is a low-overhead, fully synthesizable circuit-level countermeasure that enhances power side-channel attack security on FPGAs using a TDC-based power compensation circuit.



# WHY PARTNER WITH US?

- ▶ **Large-scale Brand Visibility**
  - Live streaming of the competition on YouTube
  - Banners, Posters, Flyers
  - Digital marketing
  - Special mention on all the certificates of LFR Contest
- ▶ **Networking/Collaboration** with Industry and Academia
- ▶ **Exposure to diverse audience**
- ▶ **Support innovation**
- ▶ **Opportunity for CSR**

## Opportunities for Sponsorship:

**Platinum Sponsorship: 3 lakhs +**

**Gold Sponsorship: 2 lakhs**

**Silver Sponsorship: ≤1 lakh**

# SPONSORSHIP

## TIER

Benefits	Platinum	Gold	Silver
• Digital advertisement	✓	✓	✓
• Banners inside DESE building	✓	✓	✓
• Banners outside DESE building	✓	✓	✗
• Logo on printed publicity material	✓	✓	✗
• Special mention in LFR contest	✓	✗	✗
• Visibility on live streaming	✓	✗	✗
• Major display at venues	✓	✓	✗



# CONTACT US

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**Toms Jiji Varghese: 99256 79264**



PRESENTS

# LINE FOLLOWER *Contest*

DATE

1ST MARCH, 2025

LOCATION

DESE, IISc

REGISTER  
NOW



WIN THE  
PRIZE



Opportunity for  
**INTERNSHIP**  
at DESE, IISc  
**PRIZE POOL OF**  
**₹50K**



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