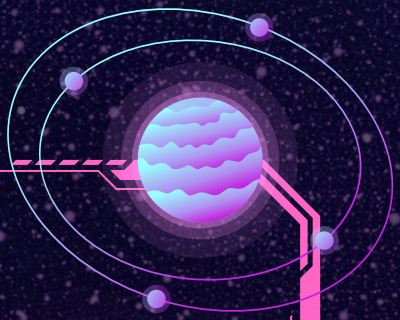
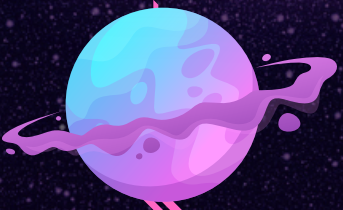
IOIT ACM
STUDENT CHAPTER

TENET



TECHFIESTA

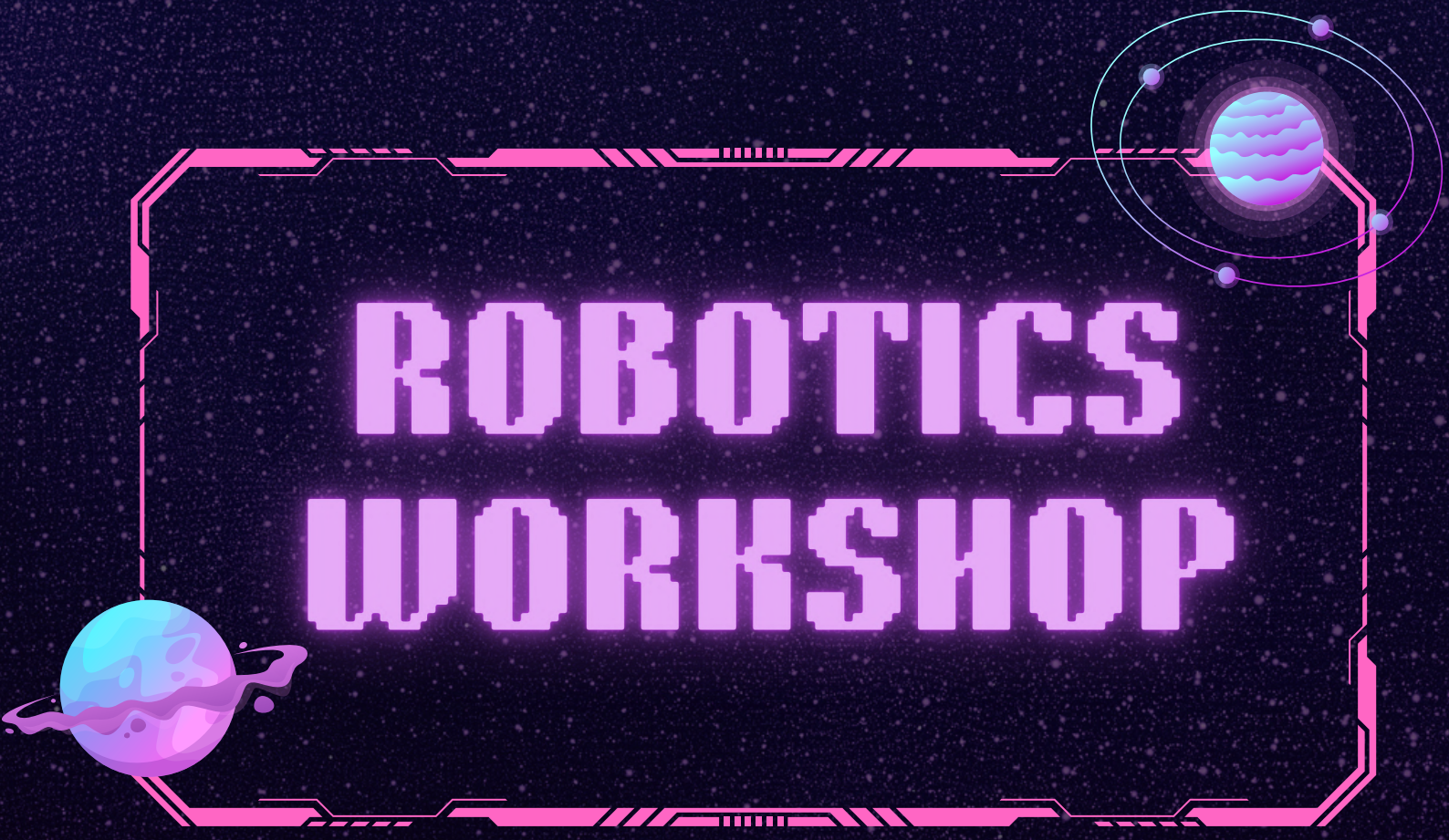
BUILDING COOL



11 - 13 OCTOBER, 2025

IOIT ACM
STUDENT CHAPTER

TENET



ROBOTICS WORKSHOP

INSTRUCTIONS MANUAL

IOIT ACM
STUDENT CHAPTER

TENET

OVERVIEW

The Robotics Workshop introduces participants to the basics of mechanical design, electronics, and hands-on assembly. Students will design a robot chassis in Fusion 360, learn motor control using H-bridge circuits and DPDT switches, and practice soldering connections to build a working prototype. By the end of the workshop, participants will gain both theoretical knowledge and practical skills to design, assemble, and operate their own robot. Participants will build a Robo-Soccer Bot in this workshop.

Post-Workshop Competition:

At the end of the workshop, a mini-competition will be organized where teams will compete using the robots they have built. The winning team will receive a direct entry into the Robo Soccer competition **(subject to time availability).**

IOIT ACM
STUDENT CHAPTER

TENET

CONTENT

DAY 1 (12/10/2025)
MORNING SESSION (10:00AM – 12:00 PM)

1. **Basics of Electronics:**
   - Basic electronic concepts like Voltage, Current, Resistance and some problem will be covered.
   - Measure voltage and current using a multimeter on small circuits.
2. **H-Bridge Theory:**
   - Purpose of an H-bridge: controlling forward and reverse motion of motors.
   - Working principle of switching current direction.
   - Practical circuit design using transistors or MOSFETs.
   - Students construct a simple H-bridge circuit and test motor rotation.

IOIT ACM
STUDENT CHAPTER

TENET

3. **Working of DPDT Switch**
    - Types of switches: SPST, SPDT, DPDT.
    - Using a DPDT switch as an H-bridge.
    - Wire a DPDT switch to control motor direction manually.

AFTERNOON SESSION (01:00PM – 04:00 PM)

1. **CAD of the Chassis**
    - Sketching basics in Fusion 360.
    - 3D operations: Extrude, Projection, Bending.
    - Finishing tools: Fillets and Chamfers for smooth edges.
    - Students design a basic chassis in sheet metal mode using Fusion 360.
2. **Assembly of the Robot (Software)**
    - Importing CAD parts into an assembly workspace.
    - Applying joints and constraints to simulate motion.
    - Checking for interference and movement feasibility.
    - Students complete a full digital assembly of their robot in Fusion 360.

IOIT ACM
STUDENT CHAPTER

TENET

DAY 2 (13/10/2025)

MORNING SESSION (10:00AM – 12:00 PM)

1. **Physical Assembly of the Robo-Soccer Robot**
   - Identifying different chassis components.
   - Step-by-step guidance on attaching wheels, motors, and supports.
   - Students assemble the actual robot chassis with guidance.

AFTERNOON SESSION (01:00PM – 04:00 PM)

1. **Soldering Connections for the Robot**
   - Safety rules for soldering.
   - Step-by-step method of making a proper solder joint.
   - Students solder motor wires, switch connections, and power supply leads.
   - A competition-ready soccer bot will be made.

IOIT ACM
STUDENT CHAPTER

TENET

DATE & TIMING

- SUNDAY, 12 OCTOBER 2025
  FROM 10:00 AM TO 04:00 PM
- MONDAY, 13 OCTOBER 2025
  FROM 10:00 AM TO 04:00 PM

VENUE

- AISSMS INSTITUTE OF INFORMATION TECHNOLOGY
- KENNEDY ROAD, NEAR R.T.O., PUNE – 411 001, MAHARASHTRA, INDIA

CONTACT

- NILAY BHANDARI: +91 9823955790
- KRUSHI SONI: +91 7249453073

IOIT ACM
STUDENT CHAPTER

TENET

WORKSHOP RULES

1. Reporting Time

- Arrive by 9:45 AM for registration and briefing.
- Workshop starts sharp at 10:00AM.

2. Registration Details

- Register only at: ioittenet.com/register
- Fee:
  - ₹2200 per Team (Team of 1 to 4)

3. Prerequisites:

- Bring your laptop and charger for CAD.
- Installed and ready to use Autodesk Fusion 360 software (student version) on your Laptops.
- A notebook & pen for notes.

**** One kit will be provided per team.**

**** Teams can take their bots with them post workshop.**

** If you have, you may bring your own soldering gun.

** Given below is the link for installing required software:
https://www.autodesk.com/products/fusion/overview

IOIT ACM
STUDENT CHAPTER

TENET

4. Certificates

- E-Certificates will be awarded to participants who attend all sessions.
- Late arrivals or early exits may result in losing eligibility for certificates.

5. Rules & Regulations

- Attendance for the entire workshop is mandatory.
- Follow all safety protocols and instructor instructions,
- Handle robotics kit and workshop materials with care – report any damage immediately.
- Maintain cleanliness and discipline at the venue.
- Kindly note that lunch will not be provided.
- Only **registered teams** are permitted to carry their bots home.
- **Individual participants will NOT get bots home.**

5. For more information

- Website: https://www.ioittenet.com
- Instagram: https://www.instagram.com/ioit_tenet