PRAYAS 3.0 – Final Report

Organized by: Centre for Continuing Education (CCE), IIT Mandi
Duration: June 15 – July 14, 2025 (one month)
Mode: Residential
Venue: IIT Mandi Campus
Participants: 112 students (across India)
Organizing Team: 38 members
Coordinator: Dr. Tushar Jain, Head, Centre for Continuing Education, IIT Mandi

1. Objective

PRAYAS 3.0 aimed to provide hands-on exposure and early training in cutting-edge technologies such as **Artificial Intelligence (AI)**, **Internet of Things (IoT)**, and **Robotics**. The month-long residential outreach program was designed to ignite interest in STEM disciplines among young learners and equip them with fundamental technical skills through structured learning, mentorship, and real-world projects.

2. Structure of the Program

- **Duration:** 1 month
- **Engagement:** ~14 hours per day
- **Curriculum Design:** Modular, progressive learning format
- **Weekly Focus:**
  - **Week 1:** Microcontroller Basics, Sensors & Actuators, Arduino & Programming
  - **Week 2:** CAD/CAM designing,3D printing, IoT Integration, Tinkering lab / Control lab / Central Workshop visit.
  - **Week 3:** Introduction to Machine Learning, Deep learning, Computer Vision, OpenCV applications.
  - **Week 4:** Final Projects and competitions– Robosoccer, Project presentations etc
- **Daily Schedule:**
  - *6:00 AM - 7:00 AM: Morning yoga sessions.*
  - *7:00 AM - 9:00AM: Breakfast*
  - *9:00 AM – 12:30 PM: Conceptual & Lab Sessions.*
  - *1:00 PM - 1:30 PM: Lunch*

- *1:30 PM – 4:30 PM: Theoretical interactive sessions.*
- *5:00 PM – 8:00 PM:* Regular sports activities and open discussions

3. Technical Activities Conducted

- **Workshops:**
  - Arduino & Microcontroller Programming
  - Computer Vision using OpenCV
  - IoT using Microcontrollers and sensors
  - ML with Python
- **Weekly Assessments**
  - To ensure continuous learning and concept clarity, weekly exams were conducted covering both theoretical understanding and practical applications.
- **Hackathons:**
  - 4 - day robotics hackathon on project Building real-world projects Line follower, Maze solver, Path tracer & Obstacle avoider.
  - Participants built end-to-end systems using IoT + ML + microcontrollers.
- **Lab Demonstrations:**
  - Visits to Tinkering lab, Control lab, 3D printing lab and Central mechanical workshop at IIT Mandi
- **Project Demonstrations, Robo-soccer & Robo-Wars.**
  - **Robo-Wars & Robo-Soccer:** Robots played soccer matches using sensor-based navigation and team coordination. Students implemented real-time control logic for goal-scoring and defense. Student-built bots competed in combat and obstacle challenges, showcasing mechanical design, durability, and control algorithms in high-intensity **one-on-one** matches.
  - **Project Demonstrations:** Participants showcased working prototypes like tilt controlled bots, smart speech controlled movement systems, and CV-based human followers, applying concepts from the entire month's training.
- **Guest Lectures:**
  - A session on product management was conducted by Mr. Rajneesh Google TV head from India.
  - A session on entrepreneurship was taken by Dean(Finance & Accounts) Prof. Satvasheel Ramesh Powar, former Faculty Advisor IITMandi catalyst start-up incubator.

4. Extracurricular Activities

To ensure holistic development and stress-relief after intense technical sessions, a wide range of extracurricular events were held:

- **Sports Activities & Tournaments:**
  - Super Sundays - Football, Volleyball, Chess & athletics.
  - Daily Sports Matches.
- **Cultural Events:**
  - Cultural Evening – Camp Fire (NCC Collaboration).

    - Open Mic session.
- **Explorations:**
    - Guided treks to Kamand Hills & Markandey temple.
    - IIT Mandi campus exploration Guided by personal mentor.
- **Recreational Activities:**
    - Movie Nights in the Auditorium.

5. Personal Mentorship

- **Structured Support System:** A team of dedicated mentors was assigned to guide groups of students, ensuring that everyone received timely support, attention, and guidance throughout the program.
- **Seamless Transition into Campus Life:** Mentors helped students navigate their arrival, settle into residential life, and access essential campus resources with ease and confidence.
- **Academic and Technical Guidance:** Mentors actively supported students in academic sessions and labs, helped clarify technical concepts, and provided hands-on assistance during project work such as building robots and solving doubts in real time.
- **Holistic Support and Encouragement:**Support extended beyond academics—mentors addressed emotional well-being, shared career advice, and helped students avoid common mistakes.
- **Strong Mentor-Mentee Bond:** A deep sense of trust and belonging was built through regular one-on-one interactions, creating a positive and inclusive environment.The mentorship model shaped PRAYAS 3.0 into an enriching and memorable journey.

6. Closing Ceremony

Prayas 3.0 has been a great experience for the participants as well as the organization team. It was truly a very enriching experience filled with fun and inspiration. It was very enjoyable in the interactive environment, the encouragement from mentors, and the chance to collaborate with peers for the participants. The closing ceremony

7. Outcomes & Achievements

- **10+ Tech Projects Completed**
- **Hands-on Proficiency:** Arduino, sensors, IOT, ML-models, circuit design, CAD/CAM modelling.
- **90%+ students reported increased confidence in STEM and tech fields**
- **Project-based learning fostered innovation and collaboration**

8. Feedback Summary

- **Average Rating:** ★★★★☆ (4.82 / 5)
- **Strengths:** High-quality mentorship, hands-on learning, sports and recreation, peer networking, and a balanced mix of technical and cultural activities.