

Suraj Dayma

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Suraj Dayma | suraj1102 | Portfolio



EDUCATION

BTech - Robotics and Autonomous Systems	Plaksha University, Mohali	8.93	2027
12th - CBSE	Global Indian Intl. School, Abu Dhabi	95%	2023
10th - CBSE	Global Indian Intl. School, Abu Dhabi	92.4%	2021

EXPERIENCE

Student Tutor | FM206: Mechatronics, Plaksha University.

Aug 2025 – Dec 2025

- Supported instruction for a Semester 3 introductory robotics course with **180+** students.
- Designed and implemented hands-on demonstration circuits** to teach electronics.
- Assisted in **conducting and evaluating laboratory sessions**, ensuring safe and correct practices.

Low Altitude Remote Sensing (LARS) for Precision Agriculture

Jun 2025 – Aug 2025

Summer Intern, Plaksha University (Supervisor: Prof. Sunita Chauhan) .

- Developed the **UGV subsystem** of a collaborative UAV-UGV precision agriculture platform for autonomous crop monitoring.
- Built a **ROS 2/Gazebo digital twin** of a UGV with a 4-DoF manipulator and tuned **ROS Controllers** for the same.
- Deployed a full **navigation stack (SLAM, localization, path planning)** on a physical robot and tuned it for robust real-time operation.

PROJECTS

Optimal Control using Physics Informed Neural Networks | Suraj Kumar, URSC, ISRO .

Sep 2025 – Dec 2025

- Developed Physics Informed Neural Networks to solve Infinite Horizon **Optimal Control Problems** for aerospace applications.
- Leveraged the **Extreme Theory of Functional Connections** to solve the Inverted Pendulum and Cart Pole Problems.
- Proposed XTFC-Unfreeze** model training method able to **control Inverted Pendulum from any state**, even outside of training.

High-Resolution Air Quality Mapping for Smart Cities

Aug 2025 – Present

Dixon IoT Lab, Plaksha University (Supervisor: Prof. Srikanth Srinivasan) .

- Designed and deployed **low-cost, weatherproof air quality IoT nodes** for dense urban sensing in a smart city monitoring initiative.
- Built a **modular sensor library** supporting extensible polling, buffering, offline storage, and fault-tolerant data logging.
- Integrated deployed nodes with a **real-time SQL backend and web dashboard** for live visualization of air quality trends.
- Conducted **geospatial analysis** of pollutant trends using data from **1,800+ monitoring stations** across India.

Lighter Than Air Systems | Prof. Rajkumar Pant.

Jan 2025 – May 2025

- Designed and fabricated a number of lighter than air systems such as **aerostat, airship envelopes, recovery devices, and launchers**.
- Engineered and deployed a **Glider and Launch Mechanism** on an aerostat, achieving a **30m+ glide from a 10m altitude**.
- Designed and validated an **Emergency Rapid Deflation System** for airships which quickly deflated the envelope in emergency, recovering both the payload and envelope material.

An LSTM-based Approach for Real-Time Score Prediction in ODI Cricket | Prof. Siddharth.

Mar 2025 – May 2025

- Proposed a **LSTM-based model** that incorporates pitch and weather conditions to **predict final scores in real-time for ODI cricket matches**.
- Achieved a **state-of-the-art Root Mean Square Error (RMSE) of 15.2 runs**.

SKILLS

- Programming Languages:** C, C++, C#, Python (Pandas, Torch), MATLAB, Bash
- Tools:** ROS2, Gazebo Simulator, Unity, RTOS
- Other Skills:** Git, Latex, CAD (Fusion 360, Onshape), Simescale, Control Systems

POSITIONS OF RESPONSIBILITY

Content Lead | GeekRoom, Plaksha University.

Aug – Dec 2024

- Content Team Lead at GeekRoom, involved in curating educational content and programming workshops for freshmen students.
- Created an educational video on simulating flock behavior (boids) in Unity.

Co-organizer | TEDxPlakshaUniversity.

Jan – Apr 2024

- Led a team of 10+ people to organize the first TEDx event at Plaksha University.
- Hosted 5 speakers from various fields; event videos have gained over 100k views on YouTube.

ACHIEVEMENTS

- Abu Dhabi Student Golden Visa:** Long-term UAE residence visa awarded for academic excellence.
- Merit Scholarship, Plaksha University:** Recognized for academic excellence with a GPA above 8 and extracurricular contributions.
- Academic Excellence Award, Rochester Institute of Technology Dubai:** Recognized for academic excellence by RIT Dubai.