

# TANAY RAGHUNANDAN SRINIVASA

+91 9663083290 | [tanay.srinivasa@plaksha.edu.in](mailto:tanay.srinivasa@plaksha.edu.in) | [tanayrs.com](http://tanayrs.com) | [GitHub](https://github.com)



## Education

**B.Tech** in Robotics & Autonomous Systems - Plaksha University, Mohali  
**12th (Karnataka State Board)** - City Composite PU College, Bengaluru  
**10th (CISCE)** - National Academy For Learning, Bengaluru

**CGPA:** 9.57 2026  
**Percentage:** 76% 2022  
**Percentage:** 90% 2020

## Work Experience

**Research Intern**, UR Rao Satellite Center, ISRO May 2025 - Jul 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 Spacecraft Detumbling Optimal Control Problems.  
• Derived the Hamilton-Jacobi-Bellman Equation, the necessary and sufficient condition for optimality, for a **constrained action space**.

**Student Tutor**, Plaksha University Feb 2025 - May 2025  
• Conducted tutorials and computational labs for RO2001: System Dynamics and Control, covering **system modeling** and **performance analysis**.  
• Designed and assisted students with the course balancing robot project, focusing on **motor characterization**, **sensor filtering**, and PID control.

**Summer Research Intern**, Robert Bosch Center for Cyber-Physical Systems, IISc May 2024 - Aug 2024  
• Designed and Tuned a Linear Controller with a **Gain Scheduler** to Balance **BiSteering Two Wheeled Robot**, achieving balance for 76s.  
• Researched and Measured Loaded and Unloaded **Motor Deadband** and Compensation techniques.  
• Measured and Compared Settling Time and Overshoot of the **Bosch Sensor Fusion Algorithm** and a **Kalman Filter**.  
• Implemented and debugged techniques to reduce **backlash** in the steering drivetrain, improving control precision.

**Research Intern**, Prof. Rudra Pratap and Prof. Andy Ruina, Plaksha University May 2023 - Jan 2024  
• Collaborated with Prof. Pratap and Prof. Ruina on solutions for their **"Introduction to Mechanics for Engineers"** textbook.  
• Created 144 Solutions to 3 Chapters: 'Vectors: Position, Force, and Moment', 'Units and Estimation', 'Trusses and Frames.'  
• Developed a **Truss Analysis Program** on MATLAB to Visualize Effects of Forces on Two Dimensional Trusses.

## Projects

**SegwayRL** | Dr. Sandeep Manjanna Jan 2025 - May 2025  
• Designed and trained **PPO** and **DQN** agents to balance a segway robot, with training in both simulation and hardware.  
• Developed a segway training and deployment environment using **OpenAI Gymnasium**, designed for 10ms sensing-actuation loop in hardware.  
• Designed a **state-action reward function**, to penalize states far away from equilibrium, while penalizing large control efforts for small errors.

**Low Altitude Remote Sensing (LARS) UAV for Crop Health Monitoring** | Prof. Sunita Chauhan Jan 2024 - May 2025  
• Developed a **ROS based communication** protocol to interface UAVs with ground robots to enable real-time autonomous crop monitoring.  
• Developed a lightweight convolutional neural network based on MobileNet-v4 meant to be deployed on **constrained edge devices**.  
• Calculated **Ground Sampling Distance (GSD)** at varying altitudes for UAVs, benchmarking imaging capabilities for precise crop health monitoring.

**Segway Path Follower** | Prof. Shashank Tamaskar Jan 2025 - Apr 2025  
• Developed an **LQR-based waypoint controller** to track 2-D trajectories while maintaining balance for a simulated differential-drive Segway.  
• Designed a hybrid PID control block, combining a PID cascade for position control with a heading controller for pose control as an LQR baseline.

## Skills

**Programming Languages:** Python, MATLAB, C/C++, ROS2, Bash, LaTeX.

**Design and Manufacturing:** Fusion 360, RD Works.

**Micro-controllers:** Raspberry Pi 3B+/4B/5, ESP-32, Arduino Uno, Arduino Nano, Teensy 4.1, STM32F103RB.

## Publications

Nanda, T.R., Shukla, A., Srinivasa, T.R., Bhargava, J., Chauhan, S. (2025). *Advancing Real-Time Crop Disease Detection on Edge Computing Devices Using Lightweight Convolutional Neural Networks*. In: Arai, K. (eds) Intelligent Systems and Applications. IntelliSys 2025. Lecture Notes in Networks and Systems, vol 1567. Springer, Cham. [https://doi.org/10.1007/978-3-032-00071-2\\_33](https://doi.org/10.1007/978-3-032-00071-2_33).

Srinivasa TR, Kumar K, *Solving Infinite-Horizon Optimal Control Problems using the Extreme Theory of Functional Connections*, Indian Controls Conference-2025 (Accepted)

## Positions of Responsibility

**Career Development Cell Representative**, Plaksha University Jun 2024 - Present  
Assisted students with placement cycle enrollment and answered queries during the third-year placement cycle.

**Mechanical Workshop Coordinator**, Robotics Lab, Plaksha University Aug 2024 - Jan 2025  
Developed the floor plan, designed the workbench, procured tools, and set-up the mechanical workshop.

## Achievements

• **SP Dutt Award for Innovation and Impact 2025**, Second Position for Project Titled "Low Altitude Remote Sensing (LARS) UAV for Crop Health Monitoring.