TARUNKUMAR PALANIVELAN

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EDUCATION

New York University - Tandon School of Engineering, New York Pursuing
Master of Science, Mechatronics and Robotics (2024-2026)
SRM Institute of Science and Technology, Chennai 2020-2024
Bachelor of Technology, Mechatronics with Specialization in Robotics GPA: 8.43/10

EXPERIENCE

Agile Robotics and Perception Lab, New York University - *Graduate Research Assistant* Sept 2024 - ongoing

- Conducted inertial measurement testing of quadrotors using Vicon motion capture, analyzing moments along each axis to evaluate dynamic performance and stability
- Engaged in safety piloting of quadrotors, ensuring controlled operations with safety protocols
- Designed CAD components and assemblies for the quadrotor platform, calibrated PX4, and integrated it with Jetson Orin for autonomous operations

Garuda Aerospace, Chennai - *Manufacturing and Assembly Intern* June 2023 - July 2023

- Assembled and tested agricultural drones under 25 kg, conducting quality inspections prior to flight testing
- Engaged in mapping and path planning using QGroundControl for the Droni surveillance drone, performing pre-flight protocols and inspection checks before each flight test

Aerospace Systems Research Laboratory, SRM Chennai - *Team Lead* May 2021 – May 2024

- Led a team of 40 in drone design, material selection, and fabrication, overseeing development for competitions and projects
- Directed the High-Maneuverability Drones category at the 'World Robotics Championship' by Technoxian, focusing on acrobatics and FPV drones
- Collaborated with startups and corporate sponsors to present projects at tech expos to government and industry representatives

My Equation (formerly TechAnalogy) - *Head of Industrial Design (Virtual Internship)* Aug 2021 - Jan 2023

- Led engineering design activities, documentation, and project analysis for efficiency and cost-effectiveness
- Developed prototypes using CAD and computer-assisted engineering for EV based project
- Mentored students across India in CAD software, analysis, and design engineering through an online platform
- Served as Design Speaker, Mentor, and Technical Assistant for the workshop Robonetics 2.0

TECHNICAL SKILLS

Programming Languages: C | C++ | Python | Embedded C | MATLAB | Java | HTML/CSS
Software Skills: Matlab/Simulink | ROS | SolidWorks | Fusion 360 | Ansys | Catia | AutoCAD | ArduPilot/Mission Planner | QGroundControl | PX4 | JIYI K++ | INAV | XFLR5 | MS Word | MS Power Point | MS Excel | LaTeX

COURSES & CERTIFICATIONS

- Certified SolidWorks Associate (CSWA) in Mechanical Design – Dassault Systèmes (2023)
- Certified SolidWorks Associate (CSWA) in Additive Manufacturing – Dassault Systèmes (2023)
- Certified SolidWorks Associate (CSWA) in Electrical – Dassault Systèmes (2023)
- Internet of Things – IIT Kharagpur (NPTEL) (2022)

ACHIEVEMENTS

- Secured **1st place** in *Rotorcraft 2024*, conducted by NITTE University, winning a cash prize of 100,000 INR (2024)
- Achieved a **top 6 position in India** for the **Yesist12 - IC Track**, organized by **IEEE Kongu Engineering** (2021)
- Ranked among the **top 5 drone teams globally** in the **World Robotics Championship**, hosted by **Technoxian** (2023)

RESEARCH PAPER

- Rathod, A., & Tarunkumar T. (2023). Enhancing Crime Scene Investigation with Drone Technology: The potential of unmanned aerial vehicles in streamlining evidence collection and analysis. IJCSPUB (International Journal of Current Science) March 2023

PROJECTS

Reconfigurable UAV+UGV Jan 2024 – April 2024

- Developed an autonomous UAV-UGV transformable prototype inspired by the Caltech M4 bot, optimizing actuators and integrating Raspberry Pi for sensor data and telemetry. Conducted FEA, CFD, and topology analyses, earning a perfect score in my final year project.

Zeus Jan 2024 – Feb 2024

- Developed a drone with a 1:1 weight-to-payload ratio and successfully executed an autonomous mission at Rotorcraft 2024, hosted by NITTE University, securing the first-place award.

Phoenix Oct 2023 – Dec 2023

- Designed a high-altitude drone with a 1kg payload capacity and developed a Molicel battery pack to enhance endurance over lithium polymer batteries. Successfully tested an autonomous mission at an altitude of 0.62 miles at NARL.

ROV Aug 2023 - Nov 2023

- Designed and developed a compact 6-thruster ROV (300x300x200mm) with automatic resurfacing for safety and tethered operation. Successfully demonstrated its diving and traversing capabilities.

Spiderbot Jan 2023 - May 2023

- Developed kinematics and control systems for robotic leg movement. Designed the internal circuit, integrating microcontrollers with sensors and wireless transmission modules.