Pranav Vadde

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Education

Purdue University, Bachelor of Science in Electrical Engineering ..... **West Lafayette, IN | Aug 2025 - May 2028**
Thomas Jefferson High School for Science and Technology ..... **Alexandria, VA | Sep 2020 - Jun 2024**

Experience

ARIES Lab, *Undergraduate Researcher* ..... **West Lafayette, IN | Oct 2025 - Present**

- Working on research in novel sensing and control technologies and architectures for locomotive robotics systems with graduate students and an assistant professor in the Advanced Robotics and Intelligent Embedded Systems (ARIES) Lab
- Using ROS2 and embedded systems programming to integrate neuromorphic sensor systems, electromechanical robotic design, and custom algorithms into wheeled, quadruped, and hexapod robots for gait and low-power navigation/control comparison

Purdue FORGE (FPGA Club), *NASA Digital Signal Processing Project Member* ..... **West Lafayette, IN | Sept 2025 - Present**

- Working with an ASU professor and NASA engineer to develop an FPGA implementing real-time FFTs and other DSP needs for use on the NASA Habitable Worlds Observatory space telescope
- Testing through simulations, implementing custom SystemVerilog HDL on physical FPGA, and running complete verification

Purdue Space Program: Active Controls, *Avionics Team Member* ..... **West Lafayette, IN | Sept 2025 - Present**

- Developing avionics, power, and communications electronics for a rocket lander for the Collegiate Propulsive Lander Challenge
- Working on control and command electronics to interface sensors, flight software, and liquid rocket propulsion systems (GNC)
- Running design reviews, EMI calculations, and other testing processes to ensure stable operation + data collection and safety

Purdue Space Program: Satellites, *CDH Team Member* | *ADCS Deputy Director* ..... **West Lafayette, IN | Sept 2025 - Present**

- Leading teams in designing custom communications, control, and computer electronics and software for a 3U CubeSat bus
- Developing custom interfaces, control systems, and hardware-in-the-loop testing suites for IRAD and COTS ADCS components using the F Prime framework
- Assist in managing 5-7 ADCS team members by assigning projects and keeping timelines, and oversee integration with CDH team

Instachip (admitted YC W25), *Founding Engineer* ..... **Bay Area, CA | May 2024 - Jan 2025**

- Founded a startup from ideation to launch by raising $600k+ at a final $20M valuation through tech demos and pitches
- Built a state-of-the-art LLM-based functional chip verification tool and advanced formal verification tool using Rust, Python, and AWS hosting that found $5M worth of bugs in a commercial SystemVerilog chip module designs
- Managed customer relations via consistent communication, resulting in design pilots worth $30k a year

US Naval Research Laboratory (NRL), *Student Engineering Technician* ..... **Washington, D.C. | Jun 2023 - Aug 2023**

- Designed a custom 3U CubeSat capable of a CUI LEO mission with six other interns for commercial and military use
- Created a 21 GHz radio board and antenna system, and integrated with 5 modulation types for payload communications
- Developed a flight computer board and associated flight software using COTS components and the F Prime framework

Projects

Simulation of Mars Rover Navigation System at the MIT Media Lab ..... **Cambridge, MA | 2025**

- Created a Mars rover Isaac Sim simulation on procedurally generated Mars-like terrain at 10 cm/pixel using Mars topography data
- Implemented neuromorphic algo. for a theoretical 7x energy efficiency, 60% speedup in autonomous navigation/path planning
- Explored applications in lunar exploration systems and potential integrations with researchers at the MIT Media Lab
- Presented at the 2025 Human Augmentation Summit as the youngest member of the Augmentation Lab Residency Program

TJREVERB — Nanosatellite launched by the TJHSST Space Program ..... **Alexandria, VA | 2022**

- Worked in a 13 member team to reorganize a 6-year project and complete a 2U CubeSat mission in about 1.5 years
- Helped design and create spacecraft structure, electronics, and a custom groundstation for VHF/UHF radio communications
- Led vibration and systems testing using facilities at the US Naval Academy to ensure compliance with NASA CSLI standards
- Organized outreach and spacecraft engineering education programs for 100+ students, coordinated radio licensing for 36 members, and delivered presentations at industry conferences
- ***Electric Propulsion Exploration (2023):*** Conducted brief individual research into additive manufacturing for CubeSat ion thrusters and a 0D model for simulating and optimizing geometry for an RF gridded ion thruster using cheaper molecular propellants

Skills

Programs: Python, Rust, Java, C++, Typescript, SystemVerilog, Fusion 360, Altium, LTspice, KiCad, Ansys STK, Tensorflow, React
Engineering: Manufacturing/Prototyping, VLSI Design, Digital, Mixed Signal, and RF Electronics Design, Embedded Systems, AI/ML