VALENTINO CATTANEO

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EDUCATION

Purdue University, College of Engineering   West Lafayette, IN
B.S. Electrical Engineering. GPA: 4.0   Graduation Date: **December 2027**
Relevant Coursework: Circuits, E&M Physics, Advanced C Programming, Digital System Design

WORK EXPERIENCE

Undergraduate Research Assistant, Purdue Power Electronics and Drives Research Lab   **June 2025 – Present**

- Modified two 3-phase motor drives to control a 6-phase drone PMSM using single FOC loop.
- Developed embedded FOC firmware using STM software tools and TI + Simulink integrations.
- Designed a PCB board with a magnetic encoder to perform Sensored motor control using KiCAD.
- Programmed and interfaced the encoder PCB with our motor driver through SPI communication.
- Troubleshooted various FOC model parameters using high-end oscilloscopes and LCR meters.
- Simulated a 6-phase drive with 2 synchronized FOC loops in Simulink (working towards fault tolerance).

LEADERSHIP AND INVOLVEMENT

President, VFS Purdue, GoAERO VTOL Competition, Purdue University   **August 2025 – Present**

- Developed autonomous flight plans that simulated operation of the Competition's Missions on the prototype.
- Conducted the Stage 2 prototype flight testing campaign from first takeoff to fully autonomous flight.
- Trained 3 new VFS leaders on how to lead a student team who's designing a human-carrying eVTOL.
- Designed a multi-cell voltage sensing and balancing Battery Management System for a 400V battery stack.
- Engineered isolated daisy-chain links between modules for safe and reliable floating voltage communication.

Vice President, VFS Purdue, GoAERO VTOL Competition, Purdue University   **September 2024 – August 2025**

- Led team of 20 to win the US University Innovation Award, raising a combined total of $74,000 USD.
- Developed a MATLAB model for preliminary multirotor weight, motor selection, and battery sizing.
- Performed power calculations to size and select the drone's powertrain based on our sizing results.
- Sketched wiring, selected components, soldered, and integrated software for all Avionics in ArduPilot.
- Integrated sensors (dToF, 2D LiDAR, optical flow) to allow for autonomous obstacle-avoidance flights.

AWARDS & SKILLS

Honorific Mention: Selective Test for the International Mathematical Olympiad (IMO).   **May 2022**
Technical Skills: MATLAB, Simulink, C, C++, Python, SystemVerilog, embedded systems programing.
Engineering Tools: Microsoft Suite, KiCAD, Fusion360, TI CCS, STM32 CubeMX and CubeIDE, Visual Studio.
Languages: Spanish: proficient, English: proficient.