Dante M. Benedetti

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Education

California Polytechnic State University, San Luis Obispo September 2022 - Present

- **M.S. Electrical Engineering** - Incoming Fall 2026 | Expected May 2027
- **B.S. Electrical Engineering** - June 2026 | GPA 3.89 | **Dean's List** (12 Quarters)

Skills

Software/Tools: Python, ROS 2, STM32CubeIDE, Vivado, Fusion 360 (PCB Design), LTSpice, AutoCAD, Git, Microsoft Office
Controls & Autonomy: PID, State-Space (Pole Placement, Luenberger Observer), Extended Kalman Filter, Sensor Fusion, Theta* Path Planning, Pure Pursuit, Stanley Control
Perception: YOLO Object Detection, OpenCV, RGB-D Perception, LiDAR Mapping
Hardware: STM32/Nucleo, Jetson Orin Nano, IMU, Magnetometer, Optical Flow, Time-of-Flight, Robotic Manipulation, Oscilloscope, Function Generator, Digital Power Supply, Solder

Technical Projects

Autonomous Vision-Based Litter Collection Rover: *Senior Project, Cal Poly, San Luis Obispo* September 2025 - June 2026

- Designed and built a three-person autonomous rover capable of detecting, navigating to, and collecting ground-level litter
- Integrated an NVIDIA Jetson Orin Nano running ROS 2 with an STM32 real-time control platform driving mecanum-wheel mobility and a two-degree-of-freedom collection mechanism
- Implemented YOLO-based object detection, LiDAR mapping, EKF state estimation, Theta* path planning, and pure-pursuit path tracking

Autonomous Quadrotor Flight Controller: *Independent Summer Project* June - August 2026

- Designed and built a custom 232 mm quadrotor platform using 5-inch propellers and a sensor-fusion-based flight-control architecture
- Developed PID attitude and altitude control using IMU, magnetometer, optical-flow, and time-of-flight sensing, with EKF state estimation for autonomous position control

Perception-Aware Autonomous Vehicle: *Quanser QCar 2, Cal Poly, San Luis Obispo* March - June 2026

- Developed an autonomous-driving stack capable of navigating a planned route while responding to stop signs and traffic lights
- Integrated global path planning, Stanley steering, PI speed control, RGB-D perception, traffic-sign detection, and finite-state-machine behavior across simulation and physical testing

Vision-Based Robotic Manipulator: *Cal Poly, San Luis Obispo* September - December 2025

- Implemented image-processing and robotic-control algorithms for a four-joint robotic arm using object-oriented Python
- Developed trajectory-generation methods and evaluated forward and inverse kinematic models for autonomous manipulation tasks

WERC Environmental Design Contest: *Cal Poly, San Luis Obispo* September 2024 - April 2025

- Researched, designed, and built multiple drafts of a scalable, low-cost green-hydrogen energy-storage system to optimize electrical grid stability
- Traveled and presented the final design to a board of judges at NMSU during a three-day convention
- Placed First for WERC Environmental Design Contest Task 2 Overall Design
- Published *"Sustainable Grid Stabilization Via Green Hydrogen Technologies"* through IEEE Xplore

Relevant Courses

Controls & Autonomous Systems: Control Systems Theory, Classical/Digital Control Systems, Planning & Control for Autonomous Vehicles
Robotics & Vision: Computer Vision, Vision-Based Robotic Manipulation, Autonomous Vehicles Laboratory
Embedded & Digital Systems: Microcontroller-Based System Design, Computer Digital Design, Computer Design & Assembly Language, Data Structures
Signals & Electronics: Continuous/Discrete Time Signals & Systems, Analog/Digital Electronics, Semiconductor Device Electronics, Communication Systems, Electromagnetic Waves

Professional Experience

Project Engineer, Pribuss Engineering INC. *South San Francisco* June 2025 - September 2025

- Designed multi-level, San Francisco City approved, fire sprinkler systems using AutoCad's AutoSprink
- Managed and coordinated on-site inspections, material delivery, and city-based hydraulic calculations

Clubs

Cal Poly Power and Energy Society: Member, EE networking for senior project design September 2023 - 2025
IEEE Cal Poly Student Branch: Member, Engaged in student collaborations within EE March 2023 - 2024
Cal Poly Roundnet Club: Member, Competed in interstate tournaments September 2022 - Present