Siddharth Zalavadia

Mechanical Engineering Graduate
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Recent UCLA M.S. graduate with 3 years of hands-on experience from engineering extracurriculars. Strong academic record and proven problem-solving skills from UCLA SAE racing team and published research in IEEE conference. Interested in automation, manufacturing, construction, energy, and transport. Open to full-time roles or internships.

Education

University of California, Los Angeles (UCLA) *Los Angeles*
M.S. in Mechanical Engineering | GPA: 3.8, Departmental Scholar *Sept. 2024 – June 2025*
B.S. in Mechanical Engineering | GPA: 3.7 *Sept. 2020 – June 2024*

Skills

General Skills: Robotics, Automation, GD&T, Engineering Communication/Presentation
Environments: SolidWorks, MATLAB, Raspberry Pi, Arduino, Blender, ANSYS, COMSOL, Abaqus FEA, OpenCV
Manufacturing: Mill, Lathe, 3D Printing, CNC, Laser Cutter
Programming: Python, MATLAB, C++, Java, JavaScript, HTML/CSS, Bash

Experience

Structures-Computer Interaction Lab at UCLA *Los Angeles*
Researcher and Platform Engineer *June 2023 – Dec. 2024*
- Deployed and tested robotic platforms for research in soft robotics using SolidWorks, 3D printers, and custom electronics
- Published and presented paper in IEEE's RoboSoft 2024 exploring attitude adjustment of bi-flagellated soft robots
- Built bio-inspired, bi-flagellated robot with inertial measurement unit (IMU) to record data and compare to simulation
- Automated pipeline for collecting training data from mobile robot with Python, OpenCV for ground truth and BLE communication protocols for neural net designed to produce a high-precision inertial navigation system (INS)
- Designed and manufactured handheld rigid buoyancy engine capable of traversing 1 meter vertically in liquid glycerin in <8 seconds using 3D-printed, threaded shells with space for a sealing O-ring
- Applied design for manufacturing principles and rapid, iterative design to meet research needs

Bruin Racing SAE/Supermileage at UCLA *Los Angeles*
Powertrain Lead Engineer *June 2022 – June 2023*
- Managed team of 6 engineers working on prototype combustion vehicle drive train optimized for fuel efficiency
- Performed risk assessment, failure analysis, and quality audits on various vehicle components for competition
- Achieved gas mileage of 422 mpg in UCLA's first complete technical inspection and run at Shell Eco Marathon since 2017
- Trained 20+ members for rapid design process using 3D-printing and simulation, suitable for competitive environment
- Reduced throttle dead zone by 90% with custom mechanical throttle between modified brake lever and Honda GX50
- Sourced and implemented cost-efficient parts for modular fuel pressurization system to enable ease-of-use
- Improved documentation process with project management tools (Trello, Google Drive), standardized BOMs for every project, and CAD drawings to facilitate efficient transfer of knowledge and reduce time reverse-engineering old projects

Powertrain Engineer *Sept. 2021 – June 2023*
- Manufactured sheet metal guards for moving parts designed in SolidWorks to ensure safety in case of catastrophic failure
- Produced engineering drawings following GD&T standards for manufacturing of flywheel and power transmission
- Reduced engine mount mass by 30% by machining mass reductions with mill and adjusting standoffs with lathe
- Thermoformed PETG for vehicle windows and prepared chassis for carbon fiber layup of vehicle monocoque
- Conducted inventory and prepared spare parts for competition readiness at Shell Eco Marathon

Projects

Air Hockey Robot for Final Group Project, MAE 263C: Control of Robotic Systems *Mar. 2025 – June 2025*
- Wrote Python scripting for 2-DOF planar arm that plays air hockey with closed-loop inverse dynamics control and trajectory generation from camera data processed with OpenCV

Whiteboard Clock Robot for Final Group Project, MAE 263A: Kinematics of Robotic Systems *Sept. 2024 – Dec. 2024*
- Wrote Python scripting for 4-DOF serial manipulator with a vertical prismatic joint that uses open-loop control to continuously write and update the current time on a whiteboard

Botanist Robot for Bachelor's Final Capstone Group Project *Jan. 2024 – June 2024*
- Programmed Raspberry Pi on mobile gardening robot with lift and movable spout to water pots identified by OpenCV
- Used BLE communication to monitor and debug autonomous robot