Siddharth Zalavadia

San Francisco Bay Area
Mechanical Engineer
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Mechanical Engineer graduate from UCLA looking for early career opportunities. Published robotics locomotion research in IEEE RoboSoft 2024 and led Powertrain sub-team for Bruin Racing Supermileage in 2022-23. Strong academic record and hands-on experience with hardware. Proficiency in mechanical, electrical, and software fundamentals and applications.

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

Environments: SolidWorks, MATLAB, Linux, Windows, Arduino, STM32, COMSOL, ABAQUS, Ansys FEA
Manufacturing: Mill, Lathe, 3D Printing, CNC, Laser Cutter, Hand Tools, Soldering, Wiring
Programming: Python, MATLAB, C/C++, Java, Bash

Experience

Structures-Computer Interaction Lab *Los Angeles*
Research Engineering Intern *June 2023 – Dec. 2024*

- Built and prototyped electro-mechanical systems for research in soft robotics using CAD for structure design, 3D-printing and hand tools for manufacturing, SPI/I2C communication for sensing, and embedded C/C++ for control
- Managed complex assemblies in SolidWorks and developed streamlined workflow for making changes to components
- Published and presented paper in IEEE's RoboSoft 2024 exploring attitude adjustment of bi-flagellated soft robots
- Sourced and selected motors, actuators, and materials informed by hand calculations of mechanisms and FEA simulations
- Implemented Bluetooth communication for mobile robot to collect training data with ground truth tracked with Python, OpenCV for a neural net designed to produce high-precision inertial navigation system (INS) utilizing sensor fusion
- Built bio-inspired, bi-flagellated robot with inertial measurement unit (IMU) to record data and compare to simulation
- Designed and manufactured handheld rigid buoyancy engine capable of traversing 1 meter vertically in high-viscosity liquid glycerin in about 8 seconds using 3D-printed, threaded shells with space for a sealing O-ring
- Troubleshot Prusa MK3S 3D-printer to ensure additive manufacturing reliability for rapid prototyping needs

Bruin Racing SAE Supermileage *Los Angeles*
Lead Powertrain Engineer *June 2022 – June 2023*

- Managed team of 6 engineers working on prototype combustion drive train and transmission optimized for fuel efficiency
- 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 automotive engineering and rapid prototyping process using CAD, simulation, and 3D-printing
- Utilized SolidWorks to model and test various powertrain components before manufacturing and integration
- Reduced throttle dead zone by 90% with custom mechanical throttle between modified brake lever and GX50 engine
- Sourced and implemented cost-efficient parts for modular fuel pressurization system to enable ease-of-use

Powertrain Engineer *Sept. 2021 – June 2022*

- 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
- Thermo-formed PETG for vehicle windows and prepared chassis for carbon fiber layup of body simulated in FEA

Projects

Air Hockey Robot for Final Group Project, MAE 263C: Control of Robotic Systems *Mar. 2025 – June 2025*

- Developed Python script for closed-loop inverse dynamics control of 2-DOF planar arm that plays air hockey
- Implemented OpenCV data collection and processing from camera to inform arm behavior and trajectory generation

Whiteboard Clock Robot for Final Group Project, MAE 263A: Kinematics of Robotic Systems *Sept. 2024 – Dec. 2024*

- Developed Python script for open-loop control of 4-DOF serial manipulator to continuously write and update current time

Botanist Robot for Bachelor's Final Capstone Group Project *Jan. 2024 – June 2024*

- Programmed Raspberry Pi on 5-DOF mobile gardening robot with lift, spout to water pots identified by OpenCV