MARIA ADELE ZAMPA (650) 441-7193 • mari04@stanford.edu • Stanford, CA

EDUCATION

Stanford University Stanford, CA
B.S. **Mechanical Engineering**; Graduating in June 2027; GPA: **3.742** Sep 2023 – Present
Relevant coursework: ME 30: Thermodynamics, ME 70: Fluid dynamics, ME 80: Mechanics of Materials, ME 149: Mechanical Measurements, ME 102: Foundations of Product Realization, ENGR 15: Dynamics, AA126: Aerospace Prototyping Lab, ME131: Heat transfer, ME103: Design and making, ME104: Mechanical Systems Designs

SKILLS

- **Programming & Controls:** Python, Arduino, MATLAB, JavaScript, C++
- **CAD & Simulation:** Solidworks, AutoCAD, Rhino 3d, Fusion360, Onshape, ANSYS Fluent, HyperMesh, OptiStruct,
- **Fabrication:** CNC machining, 3D printing, laser cutting, soldering, sand casting, welding, milling, lathe work
- **Project Portfolio:** https://mari-zampa.com/

WORK EXPERIENCES

Bulwark Dynamics Menlo Park, CA
Mechanical Engineer Intern Dec 2025 – June 2026
Bulwark Dynamics designs and builds autonomous vessels for logistics, transport, and defense applications https://www.bulwarkdynamics.com/

- Designed vessel components including bulwarks, cargo boxes, and autonomy arch for structural integration.
- Fabricated brackets, mounts, and support hardware for vessel systems.
- Fixed alignment and interface issues during assembly.
- Refined designs through prototype testing and dimensional verification.

Stanford Solar Car Project Stanford, CA
Member of Aero Sub team, Mechanical Division Mar 2025 – Present
Student-run organization at Stanford University dedicated to designing and building solar-powered cars including work on the most recent entry in the 2025 Formula Sun Grand Prix in Kentucky (2nd place)

- Integrated aerobody design with chassis, roll cage, and suspension hardpoints.
- Ran aerodynamic simulations evaluating drag, separation behaviour, and crosswind/yaw stability.
- Built the CFD workflow for meshing, solver setup, and analysis of pressure distribution and wake structure.

Stanford Shape Lab Stanford, CA
Undergraduate Research Assistant Dec 2023 – Present
Stanford Mechanical Engineering Department laboratory focused on the development of cutting-edge robotics, mechatronics, and sensing technologies with the primary goal to create dynamic 3D displays and haptic interfaces https://shape.stanford.edu/

- Designed and prototyped wearable haptic devices integrating motors, drivers, and control electronics.
- Debugged power, signal noise, I²C conflicts, and vibration performance across iterations.
- Set up the Arduino and Node.js backend that connects the wristband to the web app, letting it send real-time vibration feedback based on handwriting errors.

PROJECTS

Dual-Axis Solar Tracker Jun – Sep 2026
Personal Project

- Designed and built a dual-axis solar tracker with a motorized azimuth and elevation drive, using light sensors and Arduino closed-loop control to follow the sun.

Robotic Arm Jun – Sep 2026
Personal Project

- Designed and built a multi-joint robotic arm driven by MG996R servos through a PCA9685 PWM driver over I²C, with potentiometer-based manual control of each joint via Arduino.

Mechanical Design Project Apr – Jun 2025
ME 102, Stanford University

- Built a lever-actuated escapement and multi-stage gear train (planetary, bevel, worm-wheel). Performed kinematic, stress, and tolerance analyses. Fabricated via 3D printing in PLA and laser cutting.

Ski Pole Fabrication Apr – Jun 2026
ME 103, Stanford University

- Designing and fabricating a ski pole using sand casting, milling, and lathe processes; performed precision fitting and full assembly