

# Robert Marlow

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<https://ramarlow.github.io>

## EDUCATION

### University of California, Los Angeles

Master of Science, Mechanical Engineering, expected June 2027

- GPA: 4.0/4.0 Coursework: Bionic System Design, Linear Optimal Control, Flexures, Soft Structures/Robots

### University of Wisconsin-Madison

Bachelor of Science, Mechanical Engineering, May 2025

- GPA: 4.0/4.0 Coursework: Mechatronics, Component Design, Kinematics/Dynamics of Robot Manipulators

## EXPERIENCE

### Product Development Engineer Intern, Triton Medical Robotics

May 2023 - Aug 2024

- Doubled device verification testing capacity by duplicating and improving fixtures for 5+ test methods
- Developed Python scripts to compile and analyze robot telemetry data from rosbags, extracting driving statistics from physician and internal labs to underpin endoscope and capital equipment cyclic durability test protocols
- Supported manufacturing operations by designing and implementing assembly line fixtures, drafting and updating process instructions, and investigating reject components to improve yields, identify training gaps, and inform specs
- Built upon previous summer's successful equipment by implementing fault-tolerant design and assembling new units

### Undergraduate Researcher, UW-Madison BADGER Lab

Jan 2024 - May 2025

- Researched and implemented docker images to circumvent versioning conflicts and manage dependencies
- Wrote and maintained ROS/ROS2 nodes for teleoperation and odometry of a unique two-wheeled stable mobile robot
- Communicated underlying kinematic principles and represented the lab at local engineering outreach events

### Engineering Intern, Triton Medical Robotics

May 2023 - Aug 2023

- Designed test fixtures and performed 2000+ trials to measure behavior of submerged endoscopes and components
- Validated new test methods by conducting statistical analysis of new and historical data for catheter subassemblies
- Prototyped new product demonstration equipment, gaining experience with pneumatic control and instrumentation

## PROJECTS

### Mars Rover Science Payload, Capstone Design for Wisconsin Robotics

- Built and iterated a remotely operated soil auger for mobile subsurface sampling in the University Rover Challenge
- Established and met weight, power, and space constraints based on competition rules, client input, and rover design
- Conducted literature reviews and prototype testing to inform auger geometry and motor performance requirements
- Coordinated with teammates to plan mechanical and electrical integration with other science subsystems and rover

### Robotic Arm Project, Wisconsin Robotics

- Collaborated on an interdisciplinary team to prototype a humanoid 3-dof robotic arm for community outreach events
- Incorporated PID control of joint position and wrote inverse kinematics algorithms for more intuitive manipulation
- Redesigned motorized joints to cut backlash by 50% and ease motor loads by increasing stiffness while saving mass

### Lighted Turn Signal Glove, UW MadMakers

- Developed a wearable device to help improve visibility and communication when bicycling at night
- Implemented simple gesture and orientation recognition using an IMU sensor and ESP32 microcontroller
- Designed and assembled a custom PCB to hold LEDs, battery charging, ESP32, IMU, and UART/SPI connections

## SKILLS

**Software:** Solidworks, Onshape, Inventor, KiCad, Minitab, Excel, LabVIEW, OpenSim, EES

**Programming:** Python, Matlab, Java, C++, R, Arduino, ROS, ROS2, Docker

**Tools:** Shop Machines, 3D Printing, Soldering, Oscilloscope, Welding, Metal Casting, Glassblowing

**Design:** DFM, GD&T, Electrical Schematics, PCB Design, Electromechanical Systems

## ACTIVITIES

**Mohala Lab (Graduate Researcher), UCLA, 2026-Present**

**ASME X1 Robotics (Power Systems Member), UCLA, 2025-Present**

**Silicon Valley Bicycle Exchange (Volunteer Mechanic/Mentor), 2022-Present**

**Wisconsin Robotics (Outreach Subteam Lead, Mechanical Advisor), UW-Madison, 2021-2025**