Vedad Bassari

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Education

University of California, Santa Barbara   **Expected Graduation: June 2024**

Master of Science in Mechanical Engineering: Dynamics, Control, and Robotics - GPA: 3.95
- Master's Thesis: A Low-Cost Fiber Optic Sensing Solution for Pose Estimation and Control of Vine Robots.

Bachelor of Science in Mechanical Engineering - GPA: 3.99   **Graduation: June 2023**

Awards: Graduated with Highest Honors, Regents Scholar, Engineering Honors Program, Tau Beta Pi

Professional Experience

Mechanical Engineering Intern   **June 2023–September 2023**

Gecko Robotics, Pittsburgh, PA
- **Developed an automated test rig for mobile robots that improved failure detection effectiveness by 40%.**
- Defined functional requirements and generated system-level concepts through stakeholder interviews.
- Performed electromechanical design and analysis for hydraulic, electrical, and communication test systems.
- Implemented and refined user-facing test automation and control routines through a microcontroller.
- Characterized, documented, and improved the system's performance through rapid prototyping and testing.

Workshop Wizard   **January 2020–June 2023**

California Nanosystems Institute (CNSI) Innovation Workshop, University of California, Santa Barbara
- **Facilitated the operation of 2 student-run maker spaces by providing training and consultation services.**
- Provided engineering services to researchers by designing and constructing scientific apparatus to specifications.
- Maintained and operated 3D printers, laser cutters, CNC routers, and other electromechanical machines.
- Executed training for groups of 5 users in safe operation and best practices of the workshop tools.

Hardware Engineering Intern   **June 2022–September 2022**

Nimble Robotics, South San Francisco, CA
- **Applied knowledge of electromechanical systems to fabricate 4 assemblies for 10 units of a robot.**
- Performed root cause analysis and troubleshooting to improve the assembly process of electrical brakes.
- Procured and modified hardware to facilitate and accelerate the manufacturing and packaging of robots.

Undergraduate Research Assistant   **October 2020–June 2022**

RETouch Lab, California Nanosystems Institute (CNSI), University of California, Santa Barbara
- **Engineered high-performance, multi-material electromagnetic actuators for haptic applications.**
- Devised COMSOL Multiphysics models of a novel electromagnetic actuator to evaluate thermal performance.
- Conceptualized and built a wearable fixture that enables the use of the actuator in haptic experiments.

Projects

Apical Robotics Capstone Team   **September 2022–June 2023**

University of California, Santa Barbara
- **Built and deployed a 100 ft soft robot to inspect pipe networks that were previously inaccessible to robots.**
- Implemented and verified an analytical model of robot dynamics in MATLAB to inform robot design and control.
- Designed 3 electromechanical assemblies for a vine robot based on hand calculations and FEA simulations.
- Led procurement, CNC machining, and assembly of the hardware associated with the mentioned assemblies.
- Engaged in market discovery and financial research to prove the commercial viability of the technology.

UCSB Robotics Club   **September 2019–June 2022**

University of California, Santa Barbara
- **Planned for and participated in the design and fabrication of 2 autonomous robots as a technical leader.**
- Documented club proceedings and directed communications with the student body as the club secretary.

Skills

- Computer-Aided Engineering Tools: SolidWorks (Mechanical Design Associate), Inventor, COMSOL, ANSYS
- Software Tools: MATLAB (Control System Toolbox), Python (TensorFlow), C++ (Arduino C), Simulink, LabVIEW
- Hardware Tools: Microcontrollers, Analog/Digital Sensors, Electrical Motors, Hydraulic/Pneumatic Actuators
- Analysis Tools: Mechatronics System Modeling, Linear/Nonlinear Control Theory, Finite Element Analysis