

Sara Razavi

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EDUCATION

California Institute of Technology

Bachelor of Science, Mechanical Engineering

Pasadena, CA

Sept 2021 – Current

Relevant Coursework: Thermal Science, Fluid Mechanics, Robotics, Engineering Design Laboratory, Mobile Robots, Mechanics of Materials, Mechanical Prototyping, Design and Fabrication, Energy Technology and Policy, Introduction to Programming Methods, Introduction to Computer Programming, Dimensional and Data Analyses in Engineering, Experiments and Modeling in Mechanical Engineering, Mechanical Behavior of Materials

SKILLS & INTERESTS

Technical: Java, Python, HTML/CSS, JavaScript, ROS, MATLAB, Mathematica, LaTeX, SolidWorks, Finite Element Analysis (FEA), Arduino Programming, Ansys, Identity & Access Management, Cloud Infrastructure Security, Microsoft365, Adobe Creative Suite, Web Development, UI/UX Design

Engineering: Product Design, Mechatronics, Circuit Design, Sensor Integration, Actuator & Motor Control, CNC Machining, Machine Shop Techniques, LiPo Battery Management, and Control Systems.

Language: Dari (fluent), Farsi (fluent), Spanish (full professional proficiency).

Interests: Designing and building innovative products, public speaking and leading cross-functional teams, solving brain teasers and creative problems, exploring new experiences, and appreciating thought-provoking films that spark meaningful discussions.

EXPERIENCE & ACTIVITIES

Cedars-Sinai

Product Development Engineering Intern

Los Angeles, CA

July 2024 – Current

- Designing and simulating various EIT shapes to train machine learning algorithms and determine optimal configurations for structural health monitoring and bone health assessment.
- Processing experimental EIT data, generating datasets, and creating visualizations to analyze different electrode configurations and shapes.

California Institute of Technology

Research Assistant

Pasadena, CA

Oct 2023 – Jan 2024

- Optimized the Myo Suite environment for personalized therapeutic applications, enhancing user interaction efficiency.
- Engineering a lower body skeleton using advanced musculoskeletal modeling to improve patient mobility.

California Institute of Technology

Teaching Assistant

Pasadena, CA

Sept 2023 – Jan 2024

- Guided ME 13/113 (Mechanical Prototyping) students in fabricating prototypes and led hands-on sessions on manual machining and advanced prototyping technologies, achieving a 15% increase in student comprehension.

George Mason STIP 2022 Program

Research Assistant

Fairfax, VA

June 2022 – Aug 2022

- Led diverse research initiatives, including designing a lightweight exoskeleton for children with Hemiplegic cerebral palsy, analyzing the impact of linguistic racism on non-native English speakers using wearable sensor data, and developing personalized interventions, demonstrating versatility in applying technical skills to address complex social and medical challenges.

NASA Langley Research Center

Virginia Space Grant Consortium Intern

Hampton, VA

Dec 2019 – Aug 2020

- Coordinated a team of twelve high school students in conducting comprehensive Mars mission research, focusing on mission integration across key domains such as surface operations, transit logistics, human factors, and strategic communications.

PROJECTS

Bot Hockey

Sep 2024 – Current

- Leading a cross-functional team of five engineers to design and fabricate three specialized robots (Enforcer, Goalie, and Striker) for Bot Hockey gameplay.
- Designing high-torque drivetrains, solenoid-based shooting mechanisms, and defensive blocking systems to optimize performance.
- Creating detailed CAD models and validated prototypes with laser-cut materials before final fabrication.
- Utilizing advanced manufacturing techniques (CNC, waterjet cutting, 3D printing, mills, laser cutting, lathes) to ensure precision and cost efficiency.

Snake Robot Development

Nov 2024 – Dec 2024

- Led the development of an autonomous snake robot simulation using ROS2, implementing biologically inspired lateral undulation and real-time obstacle avoidance, resulting in a 95% reduction in collision risks.
- Engineered a dynamic control system for the robot, integrating kinematic modeling and feedback mechanisms to optimize movement trajectories, enhancing overall performance and adaptability in complex environments.

Transmission Gear Box

May 2024 – June 2024

- Engineered and fabricated a high-performance mechanical transmission for a DC motor-powered bicycle wheel, showcasing strong problem-solving skills and the ability to manage complex technical projects from concept to implementation.
- Utilized CAD software (SolidWorks) for detailed design and analysis, while performing advanced calculations to optimize gear ratios and performance trade-offs, demonstrating a data-driven approach to decision-making and technical proficiency.

EXTRACURRICULARS

Caltech Robotics

Vice-President

Sep 2024 - Current

- Leading a team in designing, building, and programming robotics for competitions, fostering collaboration and innovative problem-solving.
- Managing project timelines and resource allocation for multiple robotics projects, ensuring efficient use of team skills and equipment.
- Spearheading the development of new robot prototypes, incorporating feedback from previous competition performance for continuous improvement.

Caltech Muslim Student Association

President

April 2022 - Current

- Directing the overall vision and strategic initiatives of the Muslim Students Association, fostering an inclusive environment while promoting unity and engagement among members.
- Coordinating and executing diverse cultural, social, and religious events, enhancing community involvement, and strengthening relationships with campus organizations and external partners.