Alexa Aguilar Izquierdo

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Education

The University of Texas at Austin **Bachelor of Science in Mechanical Engineering** **May 2025**
Overall GPA: 3.75/4.0

Experience

Machine Shop Staff, The Walker Department of Mechanical Engineering, UT **September 2024 – Present**

- Train and supervise students in the safe operation of lathes, mills, and saws, ensuring adherence to safety protocols
- Maintain a clean and organized workspace, inspect and organize tools and equipment

Mechanical Engineering Intern, Applied Materials **May 2024 – August 2024**
Core Research and Development Team *Santa Clara, CA*

- Characterized thermal performance of novel semiconductor process hardware in early-stage product concept development
- Developed testing methodology - designed, executed, and troubleshot experiments to ensure reliability of results
- Set up data collection processes, installed thermocouples and troubleshot hardware
- Analyzed data using Python and Excel to interpret and present key findings, determining concept feasibility

Research Assistant, Human-Enabled Robotic Technology Lab, UT Texas Robotics **September 2023 – Present**

- Design and prototype a 2 DOF actuated laser tip mechanism for a Twin-Twin Transfusion Surgery Robot

Research Assistant, Precision Mechatronics and Control Lab, UT **May 2023 – July 2023**

- Contributed to the testing and calibration of a steerable robotic catheter for Peripheral Arterial Disease Treatment
- Achieved an 83 percent reduction in data collection time by optimizing the data acquisition process
- Implemented a precise magnet placement setup using string manipulation and SLA-printed custom plates
- Enhanced process efficiency by adjusting LabVIEW code for automated file naming, minimizing manual file management
- Conducted sensor troubleshooting, soldering, and ensured repeatability of data sets in experiments

Director, Cockrell School Cares **May 2022 – May 2023**

- Spearheaded a 30-member organization focused on mental health and student wellness
- Orchestrated regular events and managed partnerships with vendors, stakeholders, and potential donors and speakers

Projects

Robot Mechanism Design Project **February 2024 – May 2024**

- Designed, prototyped and tested a planar mechanism for a mini-golf game, capable of flicking a ball
- Performed the kinematic analysis of a Six-bar triple crank Watt's linkage employing analytical and numerical solutions

Remote Controlled Car **September 2023 – December 2023**

- Involved as the Build Lead and developed an assembly plan to manage timelines and deadlines effectively
- Designed and fabricated custom 3D printed parts; utilized laser cutting and machining for axles and chassis components

Stanford Pupper Robot Leg **September 2023 – December 2023**

- Constructed a robot leg using 3D printed and laser cut parts, implementing forward and inverse kinematics, PID control, and computer vision to command the robot to follow a red dot

Skills

- Technical Skills: Python (Pandas, NumPy, Matplotlib, SciPy), Java, C++, SolidWorks, 3D Printing, Laser Cutting, Fusion 360, MATLAB, Arduino, MS Office, LabView, Computer Vision, Computer-Aided Design, Rapid Prototyping
- Languages: Fluent in English, Spanish and French

Publications

- J. Wu, K. Yu, I. Lopez, A. Aguilar Izquierdo, H. Saber, F. Alambeigi, L. Zhou, "Integrated Magnetic Location Sensing and Actuation of Steerable Robotic Catheters for Peripheral Arterial Disease Treatment," in IEEE Robotics and Automation Letters, vol. 8, no. 9, pp. 5656-5663, Sept. 2023, doi: 10.1109/LRA.2023.3295297

Affiliations

- Texas Aerial Robotics – Software Team **February 2024 – Present**
- American Society of Mechanical Engineers **January 2023 – Present**
- Latin Economics and Business Association **August 2021 – Present**