

Mikaela Miranda

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## EDUCATION

**California State University Long Beach**, *Computer Engineering and American Sign Language* *Expected: May 2027*

## PROFESSIONAL EXPERIENCE

**LSAMP Research Fellow**, *Cochlear Implant Path Planning* *May 2025- August 2025*

- Expanded on existing MATLAB-based algorithm by integrating Python and machine learning to enhance cochlear implant path planning across three anatomical regions
- Engineered 3D-printed temporal bone models and sensor-instrumented guide wires to collect physical insertion data for ML model training and validation
- Developed automated tools for curvature and risk zone analysis, supporting safer and more precise implant surgeries

**Undergraduate Researcher**, *Hearing Loss Project* *December 2024 – Present*

- Segmented patient MRI scans using ITK-SNAP and constructed detailed 3D models of the cochlea, auditory canal, and skull base
- Integrated anatomical structures in SolidWorks to produce a unified model for clinical visualization
- Programmed a MATLAB-based algorithm to simulate cochlear implant insertion paths, laying groundwork for surgical planning

**STEM-NET**, *Student Assistant for CSU Chancellor* *August 2024 - December 2024*

- Supported statewide research symposiums and funding proposals promoting innovation across the CSU System
- Digitized internal data workflows by developing a SharePoint-based e-filing system
- Participated in strategic planning meetings focused on advancing underrepresented student research and STEM equity

**WestLand Group**, *Engineering Intern* *June 2023 – August 2024*

- Designed CAD drafts for pipeline testing and deployment using SolidWorks and AutoCAD
- Conducted on-site inspections, collaborating with a team of 4 to ensure compliance and safety standards
- Prepared technical documentation for multiple CAD design iterations and engineering proposals

## EXTRACURRICULARS

Department of Integrated Design, Engineering & Automation

Irvine Valley College

**Robotics Team**, *Team Lead*

*November 2022 – May 2024*

- Led CAD and CNC fabrication projects; collaborated with software and electrical teams to ensure system integration
- Mentored peers through design reviews and competitions; managed logistics, budgets, and build timelines

**Applied Science and Engineering Club**, *Project manager*

*September 2022 – May 2024*

- Guided multidisciplinary teams through engineering design challenges focused on creativity, prototyping, and R&D
- Oversaw administrative tasks including budgeting, financial tracking, and procurement

## PERSONAL PROJECTS

**Hydraulic Arm**

*November 2023*

- Engineered a 3-joint hydraulic arm equipped with pressure sensors, to achieve precise object manipulation up to 6 lbs

**Audio Synthesizer**

*February 2023*

- Designed and soldered electronic circuits for an audio synthesizer, incorporating sensors for pitch modulation based on object proximity

## ADDITIONAL SKILLS

SolidWorks, Excel, Word, Soldering, Data Analysis, Blueprint Reading, HTML, ITK Snap, MATLAB, CNC