# Mira Welner

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## EDUCATION

**University of California, Davis** **September 2018 — June 2022**
Computer Science Engineering, BS Overall GPA: 3.4 — Major GPA: 3.5

## PROGAMMING ROLES

**Computational Biology Researcher** | Min Xu Labs November 2024 — Present
- Leading a machine learning research project with Professor Min Xu and Dr. Jingru Yang in the computational biology department at Carnegie Mellon University.
- Responsible for leading and completing a project in which we will develop new particle picking algorithms for membrane-bound proteins using machine learning and data from Cryo-ET tomograms.

**Bioinformatics Engineer** | Signature Diagnostics July 2023 — November 2024
- Worked with Dr. Paul Cohen at Signature Diagnostics, an early stage biomedical and data science startup which develops non-invasive methods of prenatal screening.
- Used pandas, numpy and scikit-learn to conduct analyses on RNA-Seq data in python to determine which classification method and set of genes will yield the best classifier for various genetic diseases.
- Augmented a proprietary algorithm which served as a binary classifier with a data filtering algorithm, and transformed the classifier into a multiclass classifier.
- Used RAG to assist LLMs in distinguishing between severe and mild forms of preeclampsia.

**Spectroscopy and Vision Science Researcher** | Purdue University August 2022 — November 2024
- Collaborated with Professor Thomas Beechem at Purdue University's Mechanical Engineering department to develop a data-lean algorithm which processes spectroscopy data using non-negative matrix factorization to detect contaminants in mediums such as water.
- Wrote and developed matplotlib figures for a publication describing the processing algorithm for which I am first author, currently in the process of editing and submitting it.
- Served as lead programmer in a mechanical engineering lab. Created a GitHub repository for the lab and instructed lab members on GitHub use.

**Machine Learning and Vision Science Undergraduate Researcher** | CMU June 2021 — September 2021
- Collaborated with Professor Aswin Sankaranarayanan at CMU Image Science Labs to develop a modified autoencoder in python which had the standard convolutional neural network encoder, but the decoder used matrix manipulation, resulting in the hyperspectral image being compressed into its three primary component spectra.
- Presented research at the AAAI Undergraduate Symposium and sole-authored a student paper accepted and presented at the 2021 AAAI Conference on Artificial Intelligence.

**Robotics and Programming Undergraduate Researcher** | UC Davis September 2019 — March 2022
- Designed a user study for young children utilizing a video game interface connected to a myoelectric detection system and Raspberry Pi 4 programmed in C++. Collected and analyzed muscular behavior data using a MatLab program.
- My research was included in a proposal which successfully earned the lab an NSF grant
- Received a Provost Undergraduate Fellowship Award and made a poster that was accepted in the Annual UC Davis Undergraduate Research, Scholarship and Creative Activities Conference
- Co-authored a publication presented at the IEEE ICORR conference, responsible for designing figures and describing my portion of the programming.

**LLNL Summer Scholar** | National Ignition Facility June 2019 — September 2019
- Updated and refactored the six million-line Java codebase responsible for operating the National Ignition Facility at Lawrence Livermore National Laboratories.
- Developed and implemented unit tests for specific sections of the codebase that lacked adequate testing coverage

## LEADERSHIP ROLES

**UC Davis HyperLoop Team President** September 2019 — March 2021
- Led the UC Davis OneLoop team in the research, design, and manufacturing of the Davis pod for the annual HyperLoop competition
- Developed the control system programming for the pod using Structured Text
- Successfully competed in the 2018 OneLoop college competition, earning a spot among the top 21 teams selected to attend the event in Hawthorne

**UC Davis Cybersecurity Team Competition Leader** December 2018 - March 2019
- Led our five person team in participated in various cybersecurity competitions, including the Global Collegiate Penetration Testing Competition held at Stanford University;
- Trained new members during cybersecurity workshops.