

Mira Welner

miraewelner@gmail.com

mirawelner.com

[GitHub](#)

[LinkedIn](#)

EDUCATION

University of California, Davis

Computer Science Engineering, BS

September 2018 – June 2022

Overall GPA: 3.4 – Major GPA: 3.5

CONFERENCES AND PRESENTATIONS

Characterizing Pediatric Hand Grasps During Activities of Daily Living to Inform

Robotic Rehabilitation and Assistive Technologies [Paper]

Marcus Battraw, Peyton Young, Mira Welner, Wilsaan Joiner, Jonathon Schofield

International Conference on Rehabilitation Robotics (ICORR 2022)

A video game system to assess advanced control interfaces for pediatric prostheses [Poster]

Mira Welner, Jonathon Schofield

33rd Annual UC Davis Undergraduate Research, Scholarship and Creative Activities Conference (URSCA 2022)

Unsupervised Identification of Materials with Hyperspectral Images [Paper]

Mira Welner

Thirty-Sixth AAAI Conference on Artificial Intelligence (AAAI 2021)

Identification of Materials in Hyperspectral Images Using an Autoencoder and ReLU Activation [Talk] [Poster]

Mira Welner, Aswin Sankaranarayanan

2021 Virtual Ken Kennedy AI and Data Science Conference

Identification of Materials in Hyperspectral Images Using a Convolutional Neural Network-based Autoencoder [Poster]

Mira Welner, Aswin Sankaranarayanan

2021 Purdue Virtual Undergraduate Showcase

Updating the National Ignition Facility Codebase from Java 8 to Java 11

Mira Welner, Lyle Beaulac, Mikhail Fedorov

2019 Lawrence Livermore Laboratory Summer Scholar Poster Symposium

RESEARCH ROLES

Computational Biology Researcher | Min Xu Labs

November 2024 -- Present

- I recently began a research project with Professor Min Xu at Carnegie Mellon, where I will be using and modifying state-of-the-art anomaly detection technologies such as VadCLIP to determine if a lab procedure was conducted correctly based on a live video.

Bioinformatics Engineer | Signature Diagnostics

July 2023 -- November 2024

- Worked with Dr. Paul Cohen at Signature Diagnostics, an early-stage biomedical startup that develops non-invasive methods of prenatal screening.
- Conducted analyses on RNA-Seq data to determine which classification method and set of genes would yield the best classifier for various genetic diseases.
- Augmented a proprietary algorithm that served as a binary classifier with a data filtering algorithm, transforming 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 that processes spectroscopy data using non-negative matrix factorization to detect contaminants in mediums such as water.
- Wrote and developed 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, 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 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. Collected and analyzed muscular behavior data using a MATLAB program.
- My research was included in a proposal that successfully earned the lab an NSF grant.
- Received a Provost Undergraduate Fellowship Award and made a poster that was accepted at the Annual UC Davis Undergraduate Research, Scholarship and Creative Activities Conference.
- Co-authored a publication submitted to the IEEE ICORR conference, responsible for designing figures and describing my portion of the programming.

- 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.

NASA L'Space Academy Deputy Leader

December 2018 -- March 2018

- Acted as deputy leader of a ten-person programming team responsible for designing a NASA-style mission proposal.
- Presented the mission proposal to NASA executives and incorporated their feedback by making necessary modifications to enhance the proposal.

UC Davis Cybersecurity Team Competition Leader

December 2018 -- March 2019

- Led our five-person team in participating in various cybersecurity competitions, including the Global Collegiate Penetration Testing Competition held at Stanford University.
- Trained new members during cybersecurity workshops.