

# Mira Welner

Machine Learning and Computer Vision Researcher — Computer Scientist — Software Engineer

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## EDUCATION

### University of California, Davis

Computer Science Engineering, BS

**Skills:** Python3 | TensorFlow | Keras | Scikit-Learn | Matplotlib | HTML3 and CSS3 | C++ | Java | MATLAB | Scientific Writing

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

### SignatureDX Assistant Researcher | Applied Machine Learning

July 2023 — Present

- I am currently working with Professor Paul Cohen at SignatureDX, an early stage biomedical sciences startup
- I am a member of the analytics team, and work with machine learning and data science to solve problems in the biomedical field

### Purdue University Assistant Researcher | Applied Machine Learning

August 2022 — June 2023

- Collaborated with Professor Thomas Beechem at Purdue University's Mechanical Engineering Department to develop a data-lean algorithm for interpreting spectroscopy data. The algorithm aimed to streamline data analysis processes and enhance the efficiency of spectroscopic studies.
- Took on the role of the lead programmer in a dynamic mechanical engineering lab. Maintained the lab's GitHub repository, ensuring version control and efficient collaboration among lab members. Provided code troubleshooting support to colleagues and offered guidance to other teams when they encountered programming challenges in their respective projects.
- Responsible for writing and presenting our work to the mechanical engineering department and the broader scientific community.

### CMU Image Science Labs SURF | Computer Vision

June 2021 — September 2021

- Collaborated with Professor Aswin Sankaranarayanan at CMU Image Science Labs to develop a modified autoencoder for compressing hyperspectral images into material maps and spectra, utilizing hypersepectral and material properties.
- Presented research at the AAAI Undergraduate Symposium and sole-authored a student paper accepted and presented at the AAAI Conference on Artificial Intelligence.

### Schofield Lab Undergraduate Researcher | Robotics and Prosthetics

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 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 submitted to the IEEE ICORR conference, responsible for designing figures and describing my portion of the programming.

### National Ignition Facility Summer Scholar | Software Engineering

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** | OneLoop

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** | NASA

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 valuable feedback by making necessary modifications to enhance the proposal

### **UC Davis Cybersecurity Team Competition Leader** | Cybersecurity

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
- Helped instruct new members during cybersecurity workshops

## AWARDS AND FELLOWSHIPS

- Thirty-Sixth AAAI Conference on Artificial Intelligence Undergraduate Consortium Fellow | 2022
- CRA Outstanding Undergraduate Research Nomination | 2021
- NSF Expeditions in Computing Award 1730147 | 2021
- MERGE Fellow at the University of Illinois Urbana-Champaign | 2021
- UC Davis Provost Undergraduate Fellow | 2020