SUSANNA WEBER

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EDUCATION

Columbia University *Expected December 2024*
Master of Science, Biomedical Engineering

University of California, Berkeley *May 2023*
Bachelor of Arts, Physics | Minor, Electrical Engineering and Computer Science (EECS)

Relevant Coursework: Principles of MRI, Deep Learning in Biomedical Imaging, Deep Learning for Signal Processing, Biostatistics, Data Structures, Thermodynamics, Quantum Mechanics, Linear Algebra, Calculus

RESEARCH EXPERIENCE

MR SCIENCE Lab at Columbia University
Graduate Student Researcher *August 2023 - Present*

- Thesis project (in progress): Implementing **multi-coil shimming** for **cardiac MRI**
- Modeling three-dimensional B0 distributions over *in vivo* heart
- Simulating and designing multi-coil shimming setups in **MATLAB**

General Electric Healthcare
Medical Imaging AI Intern *May 2022 – August 2022*

- Built generative adversarial networks for paired and unpaired **MR to CT** scan translation in **TensorFlow**
- Implemented **vision transformers** for segmentation and identification of anatomical structures in MR scans

Hellman Lab at UC Berkeley
Undergraduate Student Researcher *January 2021 – December 2022*

- Fabricated amorphous multi-layer, ultra-thin films using magnetron sputtering
- Measured resistivity as a function of temperature using closed-cycle refrigeration system
- Built **Python** interface to control closed-cycle system, cooling samples to 3K

Max Planck Institute for Physics *May 2021 – July 2021*
Summer Research Intern

- Worked with the MAGIC Telescope Group to expedite assessment of atmospheric conditions
- Automated photometric filter system for the Magic Atmospheric Minion (MAM) in **Python**
- Collaborated with graduate students to new photometric filtering into MAM codebase

Garcia Lab at UC Berkeley
Undergraduate Student Researcher *July 2020 – January 2021*

- Simulated live imaging of gene transcription rates in fruit fly development using **MATLAB**
- Quantified number of active, transcribing cells in fruit fly embryos
- Compared simulated transcription to experimental data to identify false positives

SELECTED PROJECTS

Cardiac MRI Segmentation
Columbia University - Deep Learning for Biomedical Imaging *March 2024 – May 2024*

- Developed **deep learning** architectures to segment right ventricle of the heart in cardiac cine scans
- Implemented attention U-Net in **Pytorch** for whole heart and ventricle segmentation
- Worked with NIFTI and DICOM image formats using **NiBabel, PyDicom,** and **OpenCV**
- Achieved accuracy scores on par with leading models for the Right Ventricle Segmentation Challenge

Liquid Engine Rocket Flight Computer
Space Technologies and Rocketry at Berkeley *August 2021 – May 2023*

- Designed, assembled, and tested PCBs using **KiCad** and **Arduino/C++**
- Wrote live telemetry and data analysis software for control and monitoring of combustion during hot fire
- As avionics team lead, oversaw recruiting and training of new members as well as successful hot fire

Robotic Foosball Table
UC Berkeley - Introduction to Robotics *October 2021 - December 2021*

- Worked with a team of students to design and build a mechanical foosball table
- Used **open-cv** to track ball and **pyserial** to interface with microcontroller and move goalie correspondingly
- Implemented signed bang-bang control algorithm in **Python** for actuation

TEACHING

Lab Assistant – Basic Semiconductor Circuits
Berkeley Student Learning Center *August 2022 – May 2023*

Physics Tutor – Introductory Electromagnetism, Waves, and Optics
Berkeley Student Learning Center *January 2022 – May 2022*

Physics Tutor – Introductory Physics
Berkeley Student Learning Center *August 2021 – December 2022*

SERVICE

Undergraduate Mentor
Berkeley Society of Physics Students *September 2021 - January 2022*

- Organized info sessions, socials, and study sessions for mentorship group of first-year and transfer students

Sustainability Commission Co-Chair
Associated Students of the University of California *May 2020 - May 2021*

- Organized sustainability-focused initiatives on campus in collaboration with the student government
- Procured funding for programs including outreach to local high schools and businesses

Assistant DebateCoach
Oakland Military Institute *May 2019 - November 2019*

- Assisted coaches in setting up and administering the school's new debate team
- Helped students prepare evidence, practice speeches, and develop public speaking skills

HONORS AND AWARDS

Berkeley Physics-and-Astronomy Undergraduate Research Scholar *Spring 2021, Fall 2021, Fall 2022*

- Scholarship awarded to students for research proposals submitted in conjunction with a faculty member
- Presented results to 200+ faculty and students at the Berkeley Physics Undergraduate Poster Session
- Faculty advisor: Prof. Frances Hellman

SKILLS

- **Languages:** Python, MATLAB, Java, C++
- **Libraries:** PyTorch, TensorFlow, NiBabel, Pydicom, OpenCV, Pandas
- **Other skills:** KiCad, Arduino, AutoCAD, Git, LaTeX