CLAIRE CHEN

UC Berkeley Astrophysics '25

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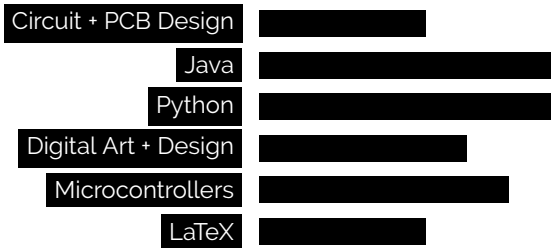
WHO AM I?

I am an intended Astrophysics student who is passionate about connecting arts, science, and engineering. My main interest is developing electronic and intelligent systems to help humans explore and discover space. Other topics I am interested in are planetary formation and how solar systems develop, the distribution of and large-scale structures formed by matter in the universe, and black holes.



Libraries: Numpy, SciPy, Matplotlib, Astropy, Pandas, Keras & Tensorflow

RESEARCH EXPERIENCE

2021 — **Solar System Sim - Python DeCal Final Project** — **ASTRON98 - UC Berkeley**
Simulating solar systems with multiple planets with user-defined properties, using Python libraries.
`Python / Jupyter Notebook`

2021 - present — **Undergraduate Researcher - GNOME @ Berkeley** — **UC Berkeley**
Set up and maintained atomic magnetometers as part of a global network searching for axion-like particles as dark matter candidates. Currently participating in a science run and data analysis for publication.
`C++ (Arduino) / Lasers / Data Analysis`

2019 - present — **Searching for Habitable Small Planet Candidates with a Deep Neural Network** — **STTP**
Developed methods to find Earthlike exoplanets by utilizing neural networks and GPU processing, resulting in the identification of 2 new possible exoplanet candidates. Presented at Regeneron Science Talent Search and recognized by SETI at Synopsys Science Fair.
`Python / Jupyter Notebook / C++ (CUDA) / Keras + Tensorflow`

ORGANIZATIONAL EXPERIENCE

2021 - present — **Space Enterprise at Berkeley** — **UC Berkeley**
As part of the Avionics team, worked on designing PCBs and electronics for a liquid bipropellant rocket engine. Currently working on designing an extension board for the main flight computer as well as contributing to media and outreach.
`PCB Design / Altium / LTSpice`

2021 - present — **Undergraduate Astronomy Society** — **UC Berkeley**

2017 - 2021 — **Tech Lead & VP of Development, Homestead Robotics** — **Homestead High School**
Led design of high level software, control and electrical systems. Worked with over 30 students in designing, building, and testing robots to compete in the FIRST Robotics Competition; received the Innovation in Control Award and KLA Creativity Award for robot system design and controls, among others.
`Java / Python / OpenCV`

OUTREACH & TEACHING

2019 - 2021 **Workshop Presenter - Western Region Robotics Forum** **Homestead High School**
Taught workshops on control theory and programming for robotics to 40+ high school and middle school students from local communities.

2019 - 2021 **Tech Workshops - Homestead Robotics** **Homestead High School**
Developed curriculum for programming, control, and electronics workshops for members of high school robotics team (50+ students). Organized projects focusing on autonomous driving and computer vision, and created libraries and "minibots" platform to help facilitate teaching.

PERSONAL PROJECTS

2021 - **Quasi-Continuous Wave Tesla Coil**
Designing and developing a more optimized version of a double resonant solid state Tesla coil from the ground up
`PCB Design / Altium / LTSpice`

2018 - 2021 **Coilgun Development**
Development of single and multi-stage coilguns from the ground up, and analyzing efficiency and barrel velocities achieved with different designs.

LANGUAGES

English - native
Mandarin Chinese - native
French - rudimentary
Russian - rudimentary

RESEARCH INTERESTS

Space exploration and spaceflight - especially exploring on other planets
Robotics - more adaptive designs and organic inspiration
Distribution of matter in the universe - dark matter, large-scale structures, development of galaxies
Astrophysical plasma
Exoplanets and planetary systems - formation, geology of terrestrial exoplanets, and detection

HOBBIES

Art - digital & traditional painting, origami, and sketching. Occasional work as freelance digital artist
Electronics - Tesla coils, electromagnetic accelerators, and wearables
Music - piano, violin
Tabletop gaming - D&D player Call of Cthulhu GM, worldbuilding and homebrew