Joseph Liu

111 W 3rd Ave #307, San Mateo, CA 94402
Phone: (650) 276-8035; Email: joseph@liu.us
https://majikalexplosions.github.io/

EDUCATION

Santa Clara University, Santa Clara, CA **Aug 2021 - Present**
Class of 2025, GPA: n/a

Crystal Springs Uplands School, Hillsborough, CA **Sep 2017 - Jun 2021**
Class of 2021, GPA 3.88 / 4
ACT: 36 / 36, SAT Math II: 800 / 800

Stanford University, Summer Session **Jun - Aug 2020, 2021**
Mathematical Foundations of Computing (CS 103),
Programming Abstractions (CS 106B)

RESEARCH AND PUBLICATIONS

Researcher, Identifying Candidate Exoplanets Using Machine Learning **May 2021 - Jun 2021**

- Conducted research into the feasibility of using RNNs on photometric data to identify candidate exoplanets
- Achieved 88% accuracy in identifying candidate exoplanets, comparable to currently existing ML techniques using light curve data, while using a simpler model

Researcher & Co-Author, Variable Stars in Andromeda (M31) **Sep 2020 - Present**

- Mentored by Sagnick Mukherjee and Dr. Raja GuhaThakurta from UC Santa Cruz and Dr. Monika Soraisam from UIUC
- Discovered and identified missing portions of PHAT (Panchromatic Hubble Andromeda Treasury) dataset around brick edges
- Identified bounds of star regions using computational geometry
- Developed Python tools for creating light curves from raw data, difference imaging, and mass SQL queries
- Created table for stars in Andromeda galaxy containing information on time baseline, measurements, and more; developed a local webpage for quickly visualizing variable stars
- Co-authoring paper “Using the Time-Domain Aspect of the PHAT Dataset to Study Luminous Cepheids and Other Luminous Variable Stars in M31's Star Clusters (Mukherjee, Liu, et al., in preparation)”

INTERNSHIPS & WORK EXPERIENCES

Secondary Mentor, UC Santa Cruz Summer Internship Program **Jun 2021 - Aug 2021**

- Mentoring 3 high school students on using photometry to identify variable stars

Software Intern, Flamingoo Foods, Rukwa Valley, Tanzania **Apr 2021 - Present**

- Customized Enterprise Resource Planning platform for the entire company

Research Intern, UC Santa Cruz Science Internship Program **Jun 2020 - Aug 2020**

- Developed algorithms for locating variable stars in Andromeda (M31) using light curve data
- Created a graphical Python application to help efficiently categorize stars based on light curve data
- Sped up existing Python code and SQL queries by over 10,000%
- Invited to continue in the fall due to contributions

Software Engineering Intern, Cardinal Blue Software, Taipei, Taiwan **Jul 2018 - Aug 2018**

- Set up a Python web server using Heroku and wrote a Slack bot to control messages displayed in the company lobby remotely
- Set up company gaming PC as an automated bitcoin miner that disables itself when an employee uses it
- Tested development builds of PicCollage, a photo editing app for mobile device

Tech Intern, Academia Sinica Agricultural Biotechnology Research Center **Oct 2016 - Jun 2017**

- Set up computers in the lab and provided technical support for software-related issues
- Carried out experiments on mice with brain tumors and documented results
- Translated software instructions and scientific papers into Chinese

EXTRACURRICULAR ACTIVITIES

Leader, Computer Programming Club **Aug 2017 - Jun 2021**

- Planned out projects and goals for the second semester
- Taught members the basics of programming
- Organized and Instructed AP CS A boot camp for school computer science students

Volunteer Teaching Assistant, Peninsula Bridge **Jun 2019 - Jul 2019**

- Taught low-income 5th and 6th graders computer science
- Supervised and led kids during lunch and afternoon activities
- Developed CS curriculum and classroom management strategies

Code Team Lead, Gryphon Robotics **Aug 2017 - Jun 2021**

- Developed target recognition and auto-aiming systems using LimeLight 2
- Coordinated with team leads and drive team to meet robot operation requirements
- Participated in two First Robotics Competitions (Semi-finals in regionals)
- Created a curriculum for robotics programming covering Python and Java. Led and mentored team members in distance learning during the COVID-19 Pandemic.

Eagle Scout, Boy Scouts of America **2015 - 2021**

- Led troop during certain outings, organized activities and scouts
- Led patrol members during meetings, outings, and activities
- Led team of scouts to remake website for Ark Baptist Church as Eagle Project
    - Website; Source

HONORS AND AWARDS

- SIP SuperComputer Award for computational skills and contributions (August 2020)
- USA Computing Olympiad (USACO) Gold Division Competitor (April 2019)
- President's Volunteer Service Bronze Award (December 2019)
- Won school-wide software competition for sorting students into clubs by preference (August 2019)
- 2018 FIRST Robotics Competition Silicon Valley Regional 6th Place Team
- 2019 FIRST Robotics Competition Silicon Valley Regional Semifinalist Team

SKILLS

Proficient

C++, Java, Python, C#
Data Structures and Algorithms

Familiar

SQL, JavaScript
Machine Learning

MY WORK

GitHub: https://github.com/MajikalExplosions

Sample Repositories

Solutions to select college-level competitive programming problems
Simple online messaging website with server
Code for robotics competition for 2019, including computer vision system