Tiffany Chieu

San Diego, CA

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Education

University of California, Los Angeles — *Los Angeles, CA*

B.S. in Computer Science and Engineering | Degree expected 2023 — *Sep 2019 - Jun 2023*

- Cumulative GPA: 3.86
- **Relevant coursework:** Operating Systems, Algorithms, Programming Languages, Artificial Intelligence, Machine Learning, Formal Languages and Automata Theory, Computer Systems Architecture, Networking, Digital Signal Processing

Experience

NASA Jet Propulsion Laboratory — *Pasadena, CA*

Software Engineering Intern | Small Scale Flight Software Group — *Jun 2022 - Present*

- Developing compiler tools in Scala for a domain-specific modeling language (F Prime Prime) that supports F Prime, an open-source flight software framework for rapid development of small-scale spaceflight systems
  - Developed C++ code generation for the language, enabling robust, high-level modeling of flight software applications with the capability to automatically generate C++ code that can be easily extended for project-specific behavior
- Expanded functional test coverage of generated C++ code to almost 100% and developed a series of reusable, type-parameterized test suites using the GoogleTest framework

NASA Jet Propulsion Laboratory — *Pasadena, CA*

Software Engineering Intern | Electronic Design Validation and Test Group — *Feb 2022 - Jun 2022*

- Developed software simulation models in C++ for touch-down sensor components on the Mars Sample Return Lander, including an analog input card and an isolated input and relay output card, as part of the lander interface card bench test equipment
- Documented verification and validation procedures for the camera interface card and camera FPGA simulation on the Mars Sample Return Lander
- Configured Jenkins project with pull request-triggered, architecture-specific (Xilinx Zynq, x86, m64 Linux) builds, integrated with existing Git repository and submodules

Bruin Spacecraft Group — *UCLA*

Command and Data Handling Lead, Software Engineer — *Oct 2020 - Jan 2023*

- Developed flight software in C++ for a CubeSat testing a miniature ion thruster, including receiving and interpreting commands sent from a ground station and dispatching them to the appropriate subsystem, monitoring and logging spacecraft health information, and operating an onboard camera
- Designed a PCB for peripheral sensors, including thermistors and a camera

DevX — *UCLA*

Backend Developer — *Apr 2020 - Sep 2020*

- Maintained the backend of BConnect, social media platform for UCLA alumni, written in Go with Postgres, hosted on Heroku
- Restructured database schema to utilize many-to-many relationships
- Improved error handling and expanded test coverage

Projects

imgproc-rs — *Dec 2020 - Present*

A Rust image processing library

- Developed a flexible container for storing and manipulating different image formats and channel data types
- Implemented color space conversions; gamma correction and histogram equalization; linear filtering through convolution; nonlinear filters including the median, bilateral, and alpha-trimmed mean filters; basic affine transformations; and morphological operations
- Improved performance via multithreading and SIMD intrinsics

space-invaders — *Nov 2021 - Dec 2021*

A classic video game on an FPGA

- Developed a simplified version of Space Invaders written in Verilog on a Nexys3 Spartan-6 FPGA
- Implemented a basic VGA controller capable of drawing and animating sprites stored as bitmaps in memory, and detecting collisions between objects on the screen
- Implemented software button debouncing for user interaction

Technical Skills / Interests

Languages	C/C++, Rust, Go, Python, Java, Scala, Verilog, HTML/CSS, JavaScript/TypeScript, shell scripting
Frameworks	OpenCV, React, Node
Tools, etc.	Git, Jenkins, MongoDB, Postgres, UNIX/Linux
Interests	Programming languages and compilers, embedded software, CubeSat development, computer vision, machine learning