Benjamin **Hinchliff**

Experienced and Versatile Computer Scientist

benjamin.hinchliff@gmail.com benjaminhinchliff.com BenjaminHinchliff LinkedIn

EDUCATION

California Polytechnic State University, San Luis Obispo | B.S./M.S. Computer Science Dec 2025

GPA 3.96 (President's Honors List)

EXPERIENCE

ANRE Technologies | NASA Jet Propulsion Laboratory Intern (Full Time) Jun 2024 – Sept 2024

- Continued to work on M2020 (Perseverance) Rover Simulation Software (RSVP Suite)
- Developed custom stereo processing pipeline to experiment with usage of more advanced stereo matching algorithms in operations
  - For prototyping purposes, uses OpenCV's implementation of semi-global matching (a moderate improvement over existing sum-of-absolute difference algorithm (SAD5) used by JPLV)
  - Processes disparity into mesh (using Poisson Reconstruction) data and heightmap for usage in simulation/verification
  - Modular pipeline allowing for changing matchng and reconstruction algorithms
- Added Looking Glass support to enhance stereo viewer (QARD)
  - Driver incompatibilities with RHEL8 (LG only supports Ubuntu) forced support via websocket to another host using reverse engineered protocol

ANRE Technologies | NASA Jet Propulsion Laboratory Intern (Part Time) Oct 2023 – Jun 2024

- Brought on part time after internship to continue RSVP development

Caltech | NASA Jet Propulsion Laboratory Intern (Full Time) June – Sept 2023

- Worked to Develop and Maintain Mars Rover Simulation Software (RSVP Suite)
- Ported simulation software from RedHat Enterprise Linux (RHEL) 7 to RHEL 8
- Fixed major issues including crashing bugs, logic bugs, data format incompatibilities, and more
- Developed new terrain searching features

Versational | Full-stack Software Developer June – Sept. 2021

- Assisted development of Deep Learning "Gems" identification models based on BERT

PROJECTS EXAMPLES

Full (uncurated) list at benjaminhinchliff.com/projects

WebGPU Accelerated Raytracer | C++20, CMake, Dawn

- A GPU accelerated Raytracer based on Google's Dawn WebGPU implementation
- Supports creation of scenes program side
- multiple primitives and materials supported using dynamically generated WGSL shaders

BanjOS | C11, x86_64 Asm, GRUB Bootloader

- Minimal x86_64 operating system written from scratch targeting the QEMU emulator
- Supports features including: VGA console output, interrupts & interrupt driven keyboard & serial drivers, dynamic memory allocation with on-demand paging (physical, virtual, & kmalloc), cooperative multitasking, and Ext2 file reading

Reinforcement Learning BalatroBot Experiments | Pytorch

- Full report in the Balatrobot repository
- Experiments with building a reinforcement learning agent for Balatro
- Based on an extended version Balatrobot botting framework for the Balatro game
- Communicates with a Pytorch model over websockets to send commands to Balatro mod
- Learned simple hand combinations and performed moderately better than baseline

SKILLS

Programming

- Arduino C++ & MicroPython - microcontroller programming
- Simulation and kinematics modeling Fundamentals
- Computer Science Fundamentals - e.g. Data Structures, Algorithms, Theory
- C, C++, Python, Haskell - Comfortable with a broad range of languages
- Web Development - React, Vue, Svelte, jQuery, vanilla JS, etc

Tools/Others

- Scripting (Bash, Python), git, CI/CD (Github Actions & Jenkins), Linux/Unix, LaTeX, vim/nano, VS(Code)