Benjamin Hinchliff

Cal Poly CS Student & Multitalented Programmer

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EXPERIENCE

ANRE Technologies | NASA Jet Propulsion Laboratory Intern (Full Time) Jun 2025 – Sept 2025

- 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 (still an improvement in quality over existing sum-of-absolute difference algorithm (SAD5) used by JPLV)
  - Matching algorithm is highly configurable and can be swapped out entirely with relative ease
  - Processes disparity into mesh (using Poisson Reconstruction) data and heightmap for usage in simulation/verification
- 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
- Working to continue Development on Mars Rover Simulation Software

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

- Created dashboard for the consumer analytics platform Versational
- Built platform integration with AssemblyAI transcription API, front-end and back-end
- Connected speakers to user accounts
- Assisted development of Deep Learning "Gems" identification models based on BERT
- Integrated the machine learning “Gems” identification models into the platform and dashboard
- Fixed bugs throughout the platform, such as credential leakage to the frontend

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

Dungeonator (Source) | C99, CMake, C++17, Catch2 (for tests), doxygen (for docs)

- Small and lightweight library for procedural dungeon generation
- Code written entirely in standards-compliant C99
- Fully documented: benjaminhinchliff.github.io/dungeonator

SKILLS

Programming

- Arduino C++ & MicroPython - microcontroller programming
- Simulation and kinematics modeling Fundamentals
- Computer Science Fundamentals - e.g. Data Structures, Algorithms, Theory
- C, Zig - Comfortable with very low level programming
- C++ - STL, OOP, API development, Boost C++, Qt, GTK, FLTK, Template Metaprogramming
- Rust - Ownership, Lifetimes, Effecient Multithreading
- Other - SQL, Python, Assembly (x86_64 & arm64)
- Web Development - React, Vue, Svelte, jQuery, vanilla JS

Tools/Others

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

EDUCATION

California Polytechnic State University, San Luis Obispo (Cal Poly) | B.M.S. Computer Science 2025

GPA 3.85 (President's Honors List)