

Josh Hejna

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EDUCATION

CALIFORNIA INSTITUTE OF TECHNOLOGY

B.S. COMPUTER SCIENCE
Expected 2024

LINKS

GitHub:// [lytigas](#)
Personal:// [joshhejna.com](#)
LinkedIn:// [in/joshhejna](#)

COURSEWORK

CALIFORNIA INSTITUTE OF TECHNOLOGY

Computing Systems
Algorithms
Data Structures
Decidability & Tractability
Discrete Math
Linear Algebra

STANFORD UNIVERSITY

Data Mining and Analysis
Differential Equations
Signals and Systems
Cryptography

JOHNS HOPKINS UNIVERSITY

Data Structures and Algorithms
Number Theory
Robotics

SKILLS

PROGRAMMING

Proficient:
Rust • C++ • C • Python
ECMA/Javascript • Web Tech • Bash
Experienced:
Typescript • Java • Node.js
ROS • OpenCV • R

SOFTWARE DEVELOPMENT

Linux/systemd • *nix Tools • AWS
Docker • Git • CI • CMake • Makefile
Bazel • SQL/RDBMS

EXPERIENCE

AURORA INNOVATION | SOFTWARE ENGINEERING INTERN

Summer 2020 | Remote

- Developed hardware-in-the-loop tests for Aurora's self-driving product, including artificial stress tests.
- Delivered new features to the self-driving execution framework and the hardware-in-the-loop testing pipeline, increasing development velocity.
- Improved system visibility by augmenting custom device firmware with additional diagnostics.
- Created visualization of key system metrics across the self-driving fleet.

NVIDIA EMBEDDED | JETSON INTERN

Summer 2018 | Santa Clara, CA

- Developed low-cost solution for the autonomous indoor navigation of mobile robots using a Camera and Deep Learning to augment a 2D-LIDAR.
- Created learned detection mechanisms for obstacles LIDAR could not detect, such as meshes, glass, and obstacles below the scanning height.
- Integrated system with ROS to make use of existing robotics libraries.
- Deployed to and did bringup of Jackal Mobile Robot Development Platform modified to use an Nvidia Jetson TX2 SoC.

STANFORD UNIVERSITY FULLER GROUP | RESEARCH ASSISTANT

November 2019 - March 2020 | Palo Alto, CA

- Assisted in development of a novel, low-cost method of measuring dynamic thin-films (such as moving tear-films on the eye) via interferometry and ML.
- Developed computer-assisted data processing and labeling software and deployed it to Amazon Mechanical Turk.
- Led decisions about convolutional neural network architecture.

FIRST ROBOTICS TEAM 114 | LEAD SOFTWARE ENGINEER

January 2017 - June 2020 | Los Altos, CA

- Won "Innovation in Control" award for custom Rust-based software stack.
- Fostered productive culture including version control, continuous integration, and static analysis, while training programmers of differing backgrounds.
- Project-managed 30+-person team on a 6-week deadline.
- Division semi-finalists at World Championships.

LOS ALTOS HACKS ORGANIZING TEAM | TECH DIRECTOR

October 2018 - June 2020 | Los Altos, CA

- Lead development of bespoke registration and management system for the largest High School Hackathon in the world. Integrated 3rd party services.
- Continuously Delivered containerized software to AWS and hundreds of users.
- Lead Capture-The-Flag competition development and execution for the event.

PROJECTS

- Rust library for interfacing with FIRST Robotics Competition hardware and deploying compiled code, with release binaries published from CI and a single-command robot bring-up process.
- Real-time actor-based execution framework via Linux PREEMPT_RT.
- Motion-profiled robot path-following using a Pure-Pursuit controller, a web-based visualizer, and η^3 -splines. Waypoints can be defined in arbitrary coordinate frames.