Michael Y. Kersey

Los Gatos, CA | michaelykersey@gmail.com | Website Resume/Portfolio
Github | Leetcode(Writeups) | LinkedIn

EDUCATION

B.S., Computer Science **August 2023 - December 2026**
San Jose State University, San Jose, CA, GPA: 3.94

PROJECT EXPERIENCE

Firmware - Lead **October 2023 - Present**
SJSU Robotics (University Rover Challenge Team)
- Organized rover's **embedded software** repository to ensure consistency and maintainability
- Recruited & Onboarded 7 new members to familiarize them with embedded and our development environment.
- Wrote and tested drivers from referencing datasheet: Drv8825 for controlling a **stepper motor**, nhd0420d3z LCD display and SCD40 sensor for CO2, relative humidity, & temperature over **I2C** (used **logic analyzer** for debugging)
- Performed trigonometric & liberal algebra calculations for **swerve drive inverse kinematics** & outlined firmware architecture including system safety using forward kinematics.
- Controlled drivetrain using **RMD X6 V2 CAN** bus enabled **smart servos** to propel and steer swerve modules.
- Designed and implemented **CAN** message formats to communicate drivetrain commands and information.

Opensource Contributor **November 2024 - Present**
Libhal (Open source C++ Embedded Library)
- Contributed to a cross platform embedded library
- **tla2528** driver & wrapper objects, chip used to provide extra **GPIO** & **adc** pins using an **I2C** connection
- **watchdog** driver for the **stm32f1 (ARM M3 microprocessor)**, used to reset the device when the whole program times out

FRC Programming - Lead **August 2020 - May 2023**
Iron Claw Robotics 972 (First Robotics Competition Team)
- Competed against 3,304 teams and finished in the **final 32 teams**, in a global robotics competition (link to record of season).
- Drivetrain motor **PID** & **Feedforward tuning**, both hand & automatic.
- Made utility and quality of life libraries such as wrappers that mapped controller input (still used by the team today) & Supplier Command used to resolve non-ideal behaviors with a 3rd party library's interface.
- Programmed climbing mechanism to traverse angled monkey bars using control logic such as limit switch debouncing & PID.
- Coordinated with other programming leads to manage software of a robot during the 3 month build and competition season.

OpenGL Perlin Noise
- Implemented a multidimensional perlin noise shader in GLSL for a water like texture that changes over time.

Minecraft Datapacks
- Wrote modification with the game's specialized coding system for private server; published some for others to use & got **1.2k downloads** total.

TECHNICAL SKILLS

Git, Github, C++ (Conan2, Cmake), Java, Python, JSON, Bash, Linux, Data Structures, Algorithms, OOP, Linear algebra, PID, Embedded (I2C, UART, CAN, Logic Analyzer, GDB) Computer Networking, Info Security, Computer Graphics (OpenGL, GLSL)