Shaurya Kumar

Software Engineer and Roboticist

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Seeking a full time role in robotics as a Software Engineer. Experienced in computer vision for robotics, platform engineering with embedded Linux, GitLab CI/CD, and modern C++. Highly-motivated with a growth mindset and eager to learn.

Professional Experience

Software Engineer Intern

Jun 2023 - Sep 2023

Opentrons Labworks, Inc. | *Brooklyn, NY*

Python/C++ Developer and QA tester for the newly launching Opentrons Flex. Automated testing flow, deployed C++ firmware, and created Python protocols for end-user science team ABR testing.

- Automated manual ABR testing with Python programming, saving 5 hours of manual testing per day and automatically logging all failures.
- Developed C++ firmware for OpenEmbedded built Linux system on the Toradex Verdin iMX8 M Mini for robotic gripper control.
- Debugged software in an agile CI/CD environment for the new Opentrons Flex, fixing 4 critical issues with the robotic gripper before deployment in 3 months.
- Designed new QA testing protocol using Zephyr Scale, increasing testing efficiency from 1 full smoke test to 3 per week.
- Performed code reviews on PRs to the open source GitHub with senior engineers to learn more about complex system software development.

Robotics Coach

Apr 2022 - May 2024

ASR Coaching LLC

Coach for high school students on FRC Team 335 Skillz Tech Gear Botz to compete in FIRST Robotics. Mentorship skills lead team to their highest placing since 2017 of 16th at FRC NYC regional.

- Taught implementation, manufacturing, and design principles for Robots with projectile launchers, climbing systems, and differential drive trains.
- Guided students in teamwork and interpersonal skills through conflict resolution, increasing average meeting attendance from three students to six.

Project Experience

Controls Systems Lead, Captain

Jan 2022 - Jan 2024

NYU UltraViolet RoboMaster VIP Team | *Brooklyn, NY*

Robot control systems developer and lead, electrical engineering lead, and project management and DevOps lead of all robot projects. Developed software and electronics for mecanum drive mobile robotics and balancing two-wheeled robotics.

- Refactored all controls code from bare metal into ROS 2 Python and C++ nodes for better integration with CV team and faster on-boarding rate, resulting in members contributing 1 month after joining team instead of 3 months.
- Integrated computer vision machine learning algorithm YOLOv8 with lidar and camera sensors for VSLAM autonomous robot movement in unstructured environment localizing via fiducial markers.
- Designed custom PCBs for slip ring adapters and subsystem controllers in Altium, allowing grounded robot chassis rotational movement while steadying gimbal movement, decreasing ability to be hit during competition.
- Developed C++ firmware for STM32 controlled RoboMaster Dev Board A for lower level hardware control and data collection of motor controllers using modm library.
- Developed and maintained GitLab CI/CD pipeline and Jira project planning utilizing commitizen for clean git commit history, allowing for 3x as many contributions from members and an always working competition ready production build.

Core Skills

Programming: C/C++, Python, C#, TypeScript, SQL, HTML/CSS, Verilog

Frameworks: ROS 2, Yocto Project, GitLab CI/CD, Scikit-learn, PyTorch

Softwares: Altium, Jira, Unity, SolidWorks

Operating Systems: Linux (Debian, Embedded), Windows, MacOS

Education

New York University

Sep 2020 - May 2024

Bachelor of Science in Computer Engineering

Minor in Robotics

Awards

University Honors Scholar

New York University

Recognized as top ranking student across full NYU 2024 graduating class.

Second Prize

RoboMaster Organizing Committee

Placed in top 5 of international RoboMaster North America 3v3 Robotics competition in 2022 and 2023.

Dean's List

New York University

Awarded 2021-2024 every semester for ranking in top 5% of NYU engineering class.

Publications

Prevention of Cu Electrolytic Migration Defects on RDL by a Cu-Selective Passivation to Enhance Reliability (Jan 2023)

Journal of Microelectronics & Elect Pkg

Lead computer vision engineer to understand and predict Copper degradation in integrated circuitry with Texas Instruments.