Shaurya Kumar

Software Engineer

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Technical 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 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 with four degrees of freedom to move labware autonomously.
- Led bug fixing for gripper software in an agile CI/CD environment for the new Opentrons Flex, fixing 4 critical issues before shipping software for full-scale production 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, increasing personal code quality and creating 3 new unit tests for previously unseen edge cases.

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 lead for mecanum drive mobile robots and balancing two-wheeled robots.

- Refactored all embedded systems code across software stack 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 reinforcement learning algorithm YOLOv8 implemented with PyTorch with lidar and camera sensors on Nav 2 stack for VSLAM autonomous robot movement in unstructured environment localizing via fiducial markers with a 98% odometry accuracy.
- Implemented Linux kernel driver support into board support package with Yocto for custom CAN messages to motor controllers, integrating hardware control into the ROS 2 stack and exposing sensor data for computer vision SLAM and auto-aim infrastructure.
- Developed C++ firmware for STM32 controlled RoboMaster Dev Board A for lower level hardware control, data collection, and memory management of motor controllers using modm library.
- Integrated AGILE Methodology and software development processes with GitLab CI/CD pipeline, Jira bug tracking, and source control, allowing for 3x as many contributions from members.
- Placed in top 5 of international RoboMaster North America 3v3 Robotics competition in 2022 and 2023.

Outreach Experience

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.

- Hosted CAD workshops with Fusion360, giving tools to students to prototype designs and understand basics of mechanical engineering, creating 3D print prototypes of climbing and launching mechanisms.
- Created lesson plans on fundamentals of robotics and computer science, teaching basic controls theory like differential drive and PID loops with Java WPILIB, leading students to develop their own robot controls code.
- Guided students in teamwork and interpersonal skills through conflict resolution and creating a safe, fun environment, doubling average meeting attendance and achieving highest placing since 2017 of 16th.

Education

New York University
Sep 2020 - May 2024
Bachelor of Science in Computer Engineering
Minor in Robotics
Relevant coursework in Data Structures and Algorithms, Object Oriented Programming, Game Development, Robotics Motion and Planning, Machine Learning, and Computer Vision with Neural Networks.

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.

Awards

University Honors Scholar
New York University
Recognized as top ranking student across full NYU 2024 graduating class.
Dean's List
New York University
Awarded 2021-2024 every semester for ranking in top 5% of NYU engineering class.

Core Skills

Programming: C/C++, Python, C#, TypeScript (JavaScript), SQL, HTML/CSS, Rust, Verilog
Frameworks: ROS 2, Yocto Project, GitLab CI/CD, PyTorch, Numpy, redis (NoSQL)
Softwares: Altium, Jira, Unity, Unreal Engine 5, SolidWorks, AWS Cloud, MySQL
Operating Systems: Linux, (Debian, Embedded), MacOS, Windows