Shaurya Kumar
Software Engineer

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Seeking a full time role in mobile robotics as a Software Engineer. NYU Robotics captain for 4 years looking to continue work in computer vision systems, platform engineering with embedded Linux, GitLab CI/CD, and modern C++.

Education
Sep 2020 - May 2024

New York University
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 AI, and Computer Vision with Neural Networks.

Core Skills
Programming Languages: 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

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, 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.
- Identified and fixed 4 critical bugs for gripper software in CI/CD environment within 3 months to ensure OT-Flex gripper was production-ready.
- Designed new QA testing protocol using Zephyr Scale, increasing testing capabilities from 1 full smoke test to 3 per week.
- Performed code reviews on PRs to the open source GitHub with senior engineers, increasing code quality and creating 3 new unit tests.

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

- 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 in 1 month instead of 3.
- Integrated computer vision reinforcement learning algorithm YOLOv8 trained with PyTorch with lidar and camera sensors on Nav2 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 VSLAM and object tracking.
- 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 design processes with GitLab CI/CD pipeline, Jira bug tracking, and source control, allowing for 3x as many contributions from members.

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 placing top 16 in NYC regionals for first time since 2017.

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.