Harshit Srivastava

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PROFILE

Computer Engineering undergraduate at the National University of Singapore with experience in embedded systems, robotics, FPGA design, and system integration.

KEY SKILLS

Programming: C, C++, Python, Java, JavaScript, GDScript, Verilog

Embedded and hardware: STM32, FreeRTOS, bare-metal microcontroller programming, CAN/FDCAN, UART, GPIO, timers/PWM, HIL testing, embedded debugging, hardware validation, PCB design, KiCad, FPGA, Arduino

Robotics and systems: ROS 2, Nav2, SLAM, autonomous navigation, system integration, sensor and actuator interfacing

Software and test automation: Python test automation, Tkinter, pywebview, serial communication, automated hardware testing, HTML report generation, OOP, CLI applications, JUnit

Tools and platforms: Git, Linux (EndeavourOS, Ubuntu), KiCad, Godot Engine, LTspice

EDUCATION

National University of Singapore

Aug 2024 - Jul 2028

Bachelor of Engineering in Computer Engineering; Second Major in Innovation and Design Programme; GPA: 4.13 / 5.0

City Montessori School

Mar 2014 - Jul 2024

High School; Class 10: 98.40%; Class 12: 97.75%

EXPERIENCE

Embedded Systems Intern - LionsBot International

May 2026 - Jul 2026

- Architected and led development of a hardware-in-the-loop ECU test platform using STM32U585, C, FreeRTOS, FDCAN, and Python/pywebview, emulating sensors, actuators, loads, current feedback, and pulse signals.
- Automated approximately 20 end-to-end ECU validation cases, reducing execution from approximately 10 minutes to under 1 minute, with an architecture designed to expand toward approximately 200 planned cases.
- Developed a Python/Tkinter R5 RFS QC application for UART commands, response parsing, pass/fail evaluation, operator cross-verification, and traceable HTML reports.
- Reduced RFS validation from approximately 15-20 minutes to approximately 2-5 minutes per unit across approximately 12-15 hardware components while retaining human verification for physical behaviours.
- Deployed the QC workflow to the manufacturer in China for PCB-level and post-assembly testing, supporting a planned initial production run of approximately 300 RFS units.
- Designed, fabricated, and validated a two-layer KiCad interface PCB for a new RFS trolley system, including schematic, component selection, layout, bring-up, rapid prototyping, and CAD/3D fit checks.
- Analysed and simulated R5 robot PDB and ECU circuitry in LTspice, including fans, buffers, opto-isolators, I2C level shifters, and interface circuits.

Galassia-5 Satellite Programme - Skunkworks SBC Team Lead

Jan 2026 - Apr 2026

- Led the team designing an alternative onboard computer architecture and a COM Express Type 10 custom SBC/carrier PCB with power, I/O routing, and interface layout.
- Performed system-level compute, FPGA, and peripheral trade studies under power, radiation, thermal, and reliability constraints.
- Coordinated weekly reviews with radio, payload, camera, and avionics teams and developed architecture, integration, and testing documentation.

National University of Singapore - Teaching Assistant, CG2111A

Jan 2026 - Apr 2026

- Guided approximately 20 students through Arduino-based bare-metal microcontroller labs, C programming, register-level peripheral configuration, I/O, and debugging.
- Graded lab and project work and clarified embedded systems, digital logic, and microcontroller concepts.

National University of Singapore - Teaching Assistant, CDE2310 — Jan 2026 - Present

- Mentor students using ROS 2 on Ubuntu, including setup, packages, navigation-stack usage, build and launch issues, and workspace organisation.
- Grade assignments, presentations, and mission runs for 12 student teams.

Society of Floating Solutions - Website and Social Media Manager — Jul 2025 - Present

- Maintain the organisation's website and coordinate programme information, announcements, and scheduled social content.

NUS Bitscraps - Publicity Subcommittee Member — May 2025 - Present

- Design posters, promotional material, and branding elements, and maintain a dynamic website without frontend frameworks.

Raffles Hall Developers - Web Designer and Developer — Aug 2024 - May 2025

- Worked with hall committees on production website components and structured UI/UX iterations.

SELECTED PROJECTS

Wearable Fall Detection Device - STM32 Embedded System — Feb 2026 - Mar 2026

- Developed STM32 C firmware for accelerometer and gyroscope fall detection, implemented a sliding-window moving average filter in assembly, and exported stored data to a mobile dashboard through NFC.

CuddleCare - CLI Pet Care Management System — Sep 2025 - Nov 2025

- Built Java command parsing and validation flows, core commands, defensive validation, logging, fault-tolerant storage, JUnit tests, UML diagrams, and substantial user and developer documentation.

K-Map Simplifier and Visualiser - FPGA — Oct 2025 - Nov 2025

- Designed a real-time three-variable K-Map system with switch input, OLED and LED feedback, SOP/POS modes, canonical expression generation, modular rendering, and top-level team integration.

UniQuest - Game — May 2025 - Aug 2025

- Built a two-person NUS-themed Godot platformer with custom assets, character customisation, combat, collectables, progression, touch controls, and Linux, Windows, Web, and Android builds.

Autonomous Search-and-Rescue Robot - TurtleBot3 — Jan 2025 - Apr 2025

- Integrated ROS 2 Humble, Nav2, SLAM, A* planning, 2D LiDAR, and IR heat sensing for autonomous navigation and heat-source goal generation in an unknown maze.

JavaCS - Website — Jul 2023 - Oct 2023

- Developed an educational site curating ISC Computer Science Java solutions by year and topic using HTML, JavaScript, and Java examples.

GARUDA - Discord Bot — Nov 2020 - Nov 2022

- Developed and maintained a Node.js and Discord.js bot with games, moderation, giveaways, greetings, and utilities that operated across more than 1,000 servers.

CERTIFICATIONS AND SERVICE

Google Data Analytics Certification Programme; AI Singapore AI4I - Foundations in AI; Orbital - Apollo 11 (Advanced); Code Sprint - PSA Hackathon

Silver Homes volunteer, Feb 2026; RVC x RHDevs coding instructor for foundational HTML and CSS, Mar 2025.