TANVIR SINGH

647-542-6310 | tanvirsingh6803@gmail.com | linkedin.com/in/singht52 | github.com/Tanvir6803 | tanvirsinghportfolio.com

Education

B.Eng | Year 4 Computer Engineering (Co-op) | ***McMaster University, Hamilton, ON*** **Sept 2021 – Apr 2026**

- **Relevant Courses:** High-Performance Programming, Computer Architecture, Embedded Systems, Principles of Programming (C/C++), Software Development, Algorithm Design & Analysis, Digital Systems Design, Logic Design.

Work & Extracurricular Experience

Software Quality Engineering Intern | ***Veoneer Canada Safety Systems, Markham, ON*** **May 2024 – Aug 2025**

- Developed software tools and dashboards with Python, C#, Java, React, and created data reports with Power BI to track quality metrics across **10+ subsystems**, improving reporting speed.
- Automated workflows using Python, C#, Web APIs, and Power Automate, resulting in **~40% time savings**.
- Tested ECU and satellite modules by analyzing, modifying, and validating circuit boards and schematic design.

Software Engineer Intern | ***Alphavima Technologies, Mississauga, ON*** **May 2023 – Aug 2023**

- Developed mobile app for software tool, Givelife365, using Java for backend and React, HTML, and CSS for UI/UX.
- Collaborated on designing and improving frontend features for internal software tools using Angular, TypeScript, HTML, and CSS to enhance user experience and functionality.
- Managed backend CRM/ERP databases to ensure accurate analytics and effective communication between teams.

Software Sub-team Member | ***McMaster Aerial Robotics & Drones Team, Hamilton, ON*** **Jan 2025 – Present**

- Developed autonomous navigation, including waypoint tracking, obstacle detection, and flight stability, using Python and C++, tested in **various simulation environments** with **95% waypoint accuracy**.
- Built a full-stack interactive drone tracking dashboard using React, Next.js, PostgreSQL, REST APIs, and Docker.
- Deployed a mobile-friendly team website using React, Next.js, Vercel, and AWS to showcase ongoing club details.

Projects

3D Lidar Sensor

- Built a 360° LiDAR device with a VL53L1X ToF sensor and 28BYJ-48 stepper motor for 3D scanning and rendering.
- Programmed a TI MSP-EXP432E401Y board in C/C++ for motor step control, ToF sensor input, I2C data handling, and UART serial communication to send sensor data to a PC for post-processing and visualization.
- Processed scan data and generated 2D and 3D plots of the environment using Python (Anaconda, Pandas).

Hardware Implementation of an Image Decompressor

- Created a system with Verilog to decode YUV data, transmit via UART, and buffer to SRAM on an Altera DE2 board.
- Integrated a VGA circuit that reconstructs compressed images and displays them in real time with no mismatches.

Custom Pacemaker Device

- Constructed and configured a pacemaker device that monitors and regulates a patient's heart rate via bi-directional telemetry between the Device Controller-Monitor (DCM), Simulink, and external hardware.
- Assembled a Python (Tkinter) GUI to monitor heart rate data and control pacemaker operating modes in real-time.

Blink-Controlled Car

- Engineered a small-scale, blink-controlled car using Arduino and Python, integrating basic EEG signals to control motor movement based on users' blink gestures.
- Refined EEG signal processing logic to extract blink patterns, allowing for responsive motor control and navigation.

Quizler App

- Prototyped a collaborative educational app interface at DeltaHacks Hackathon with Figma, focusing on ease of use.
- Built a "Brainstorm Room" for students using JavaScript, HTML, and CSS to enable synchronous peer collaboration.

Skills

Languages: C/C++, C#, Python, Java, JavaScript, Verilog HDL, SQL
Web Development: React, Next.js, Node.js, Express.js, Leaflet.js, Angular, TypeScript, HTML, CSS, Tailwind CSS
Software/Technologies: MATLAB/Simulink, Vercel, Docker, PostgreSQL, AWS, pgAdmin, Git, VS Code, Anaconda/Pandas, Linux, Quartus II, PSpice, LTspice, Keil, Power BI, Power Automate, Figma
Hardware: PLCs, Microcontrollers, Microprocessors, Arduino, AD2 Board, Raspberry Pi, Altera DE2 (FPGA)