

Aarjav Jain

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OBJECTIVE: Join a team of innovative and user-oriented firmware and embedded systems developers.

TECHNICAL SKILLS

Programming Languages: C, C++, ARM Assembly, Python.

Hardware and Peripherals: STM32 microcontrollers, CAN, UART, I2C, I2S, SPI, PWM, DMA.

Frameworks and Applications: FreeRTOS, Embedded C, Linux (Ubuntu 22.04).

Software/Agile Tools: STM32Cube IDE, Git, Visual Studio Code, Arduino IDE, Jira, IntelliJ IDE.

EDUCATION

University of British Columbia

Expected Graduation: May 2027

Bachelor of Applied Science - Computer Engineering

CGPA: 4.33

Related Courses: Computing Systems I & II, Algorithms and Data Structures, and Software Construction

ENGINEERING STUDENT TEAMS

Solar, UBC

September 2023 – Present

Embedded Systems Team (EMBD) Co-Lead

June 2024 – Present

- Led the start-to-finish of key projects on our 6-member team, surpassing planned goals for the year.
- Proactively strategized EMBD's future with Solar's executives by planning recruitment, resource management, member onboarding, and EMBD projects by consulting other teams and translating strategy requirements.
- Focused on simplifying our EMBD systems, such as the driver dashboard and motor control system, by collaborating with other electrical sub-teams to reduce unnecessarily complex components inside the systems.
- Performed routine design reviews and pushed documentation of all decisions and work using monday.com.
- Conducted reviews and approvals for GitHub PRs and planned releases for our firmware and Python repositories.

Embedded Systems Engineer

September 2023 – June 2024

- Developed our telemetry and motor control system by configuring FreeRTOS middleware and CAN, I2C, UART, and DMA peripherals for STM32F103RB chips on custom PCBs. Wrote the firmware using VSCode.
 - Designed a Python Flask backend to read PCAN, XBee radio, and randomized data using threading and cantool libraries. The backend parses, stores, and visualizes CAN data on InfluxDB and Grafana.
 - Architected and wrote a CAN Autogen Layer to reduce production bugs and simplify FW development.
 - Efficiently debugged issues using STM32CubeIDE's OpenOCD + GDB server to use a StackAnalyzer and Expressions which assisted in identifying bugs in our telemetry and main control board firmware.
 - Integrated a Kvaser Memorator 2xHS Pro using Kvaser's 't' programming language to generate RTC timestamps as CAN messages. Wrote the firmware to sync our TEL board's RTC for 1ms resolution data logging.
 - Automated SD card upload using canlib, and repository setup with a bash script to optimize data acquisition.
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WORK EXPERIENCE

NETGEAR – Software Developer Intern

April 2024 – Present

- Developed a Python client-server model to monitor and validate Orbi Topology Optimization against TCP data rates, generating PDF reports on the network topology over time, which speeds up customer support by 90%.
 - Took initiative for constructing multiple labs. This involved AutoCAD layout prototyping, numerous test resources, an executive team, and task management to improve our Orbi mesh product's development environment.
 - Utilized Jira and GitHub for tracking project progress, collaborative development, and distributing scripts.
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TECHNICAL PROJECTS

Music Beat Detector, Personal Project

May 2023 – August 2023 | August 2024 – Present

- Researched and prototyped an accurate beat detection algorithm to sync to bass, hi-hats, and claps.
- Integrated the C algorithm on a STM32F407G-DISC1 using PWM to control WS2812B LEDs, I2S data from a MEMS mic (SPH0645LM4H), and UART to visualize data in Python for an immersive light show to any music!
- Utilized multithreading, portaudio, WinAPI, and fftw3 in C to flash a computer screen to the beat.
- Displayed lyrics using the Spotify and synchedlyrics API in Python to create a distributable application.