# Tayyib Chohan

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## EDUCATION

**University of British Columbia** Expected Graduation - May 2025
Computer Engineering - *Bachelor of Applied Science*
**Relevant Courses:** Digital Systems Design, Distributed Systems, Computer Communications, Operating Systems

## SKILLS

**Programming:** C, C++, Python, Arm Assembly, x86 Assembly
**Hardware & Embedded Systems:** I2C, SPI, UART, CAN bus, WiFi, ESP32, STM32, FPGAs, Raspberry Pi
**Robotics and Control:** Computer Vision, PID, Sensor Fusion, PyTorch
**Development Tools & Environments:** Git, Docker, PlatformIO, Arduino, Embedded Linux, FreeRTOS
**Software Development:** Agile, Scrum, Test-Driven Development, CI/CD, GDB, Valgrind

## TECHNICAL EXPERIENCES

**UBC Uncrewed Aerial Systems (Engineering Design Team)** |UBC Sept 2020 - Sept 2024
*Team Lead, Payload Design and Development*

- Led a team of 20 engineering students, successfully designing and building five mechatronic projects for intercollegiate competitions winning 15th / 76 international intercollegiate teams
- Developed C++ firmware for an autonomous rover on an Arduino platform using PlatformIO, implementing GPS-based waypoint navigation including geofencing
- Interfaced and integrated diverse sensors (GPS, IMU, barometer, encoders) using I2C/SPI/UART protocols, providing essential data streams for navigation and altitude determination
- Utilized FreeRTOS on an ESP32 microcontroller in order to simultaneously read telemetry and actively control servos for an autonomous guided parachute system
- Designed and constructed a rover for delivering and scanning medical packages utilizing embedded C and rapid prototyping techniques, securing 2nd place in the initial phase of a national competition.
- Implemented Kalman filters in C++ to fuse noisy barometer and IMU data, enabling accurate real-time altitude estimation during parachute deployment
- Engineered a reliable multi-processor communication architecture employing UART and WiFi for real-time command and data transmission across seven distributed microcontrollers and onboard computers

**Korotu Technology Inc,** Toronto, ON May 2023 - April 2024
*Software Engineer and Consultant*

- Led development of a CI/CD automation suite using Playwright, GitHub Actions, and PyTest, reducing regression testing time by 95.83%.

**Trulioo Information Services Inc,** Vancouver, BC May 2022 - Aug 2022
*Software Engineer Intern*

- Built scalable frontend components using TypeScript, ReactJS, custom hooks, and contexts
- Migrated, updated, and tested legacy ASP.NET services, enhancing performance and maintainability

## PROJECTS

**Retro Game Port to MC68K System|** UBC 2025

- Designed and implemented custom hardware logic in Verilog to interface with the VGA controller and buffer pixel data, ensuring correct video timing
- Developed low-level C drivers and functions to directly manage hardware, including rendering and erasing game sprites on a VGA display.
- Implemented a Space Invaders-style arcade game in C for a bare-metal MC68K microprocessor system

**I2C Controller Interface with EEPROM and ADC/DAC** | UBC 2025

- Implemented C functions for optimized block read/writes to an I2C EEPROM (Microchip 24xx) and to read sensor data from an I2C ADC (PCF8591) and control its DAC output.

**SPI Controller and Flash Memory Interface** | UBC 2025

- Integrated a Verilog SPI controller onto an MC68K FPGA system (Altera DE1), designing VHDL/Verilog interface logic and resolving bus timing issues.
- Developed bare-metal C drivers and protocols to manage the SPI controller and communicate with an external Winbond SPI Flash chip (read, write, erase, status check)