Yusuf Hasan

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Education

University of British Colombia — Vancouver, BC
Bachelor of Applied Science, Electrical Engineering — *Expected: May 2026*

Experience

Hardware Pre-Development Intern — June 2024 – April 2025
Robert Bosch Gmbh (Bosch) — *Reutlingen, Germany*

- Designed **STM32-based** sensor test and data-collection **PCBs** with onboard memory and multiple interfaces (FDCAN, SPI, I^2C, UART, USB3300), enabling evaluation of **next-generation MEMS inertial sensors** at >12.8kHz in **Altium**
- Wrote efficient **C firmware** to validate sensor functionality and performed data collection and analysis on 10+ **automotive MEMS sensors** concurrently during field testing
- Analyzed and evaluated IMU data in **Matlab and Python** to characterize next-generation sensor performance (bias,noise, offset, sensitivity) under different vibration/stimulus profiles
- Researched and Developed robust measurement scheme to perform **characterization** MEMS gyroscope sensitivity to static linear acceleration (Offset G-sensitivity)using a modified maytagging approach accounting for the projections of earths rotation using **Python**
- Prepared a research on MEMS Gyro compassing with an array of consumer grade, 6-DoF IMUs

Automation Intern — May 2023 – August 2023
Inter Pipeline — *Calgary, AB*

- Automated service desk ticket routing and developed a generative AI service desk chatbot using Azure services saving a projected $150,000 per year
- Utilized Azure API Management and REST to connect Cherwell Ticket Management to Microsoft Teams environment and automated HTTP requests for users through an authentication token system

Research/Design Team Experience

Undergraduate Research Assistant — Jan 2026 – Present
Radio Science Laboratory, University of British Columbia — *Vancouver, BC*

- **Configured, tested, and monitored Weak Signal Propagation Reporting (WSPR)** transmitters for long-range HF propagation experiments
- Supported deployment of **WSPR** payloads aboard maritime platforms for ionospheric and propagation studies
- Assisted in **data collection** and analysis for **signal propagation characterization** under varying environmental conditions

Applied AI Developer — Sep. 2023 – Jan 2024
UBC AgroBot — *Vancouver, BC*

- **Fine-tuned a faster R-CNN** to perform real-time weed detection in an autonomous agriculture robot in Python using TensorFlow and OpenCV
- Developed and implemented **image processing pipeline** for 2000+ images to create weed detection dataset

Projects

Hybrid Localization Unit | *C, Python, ESKF, PCB design, IMU* — Sep 2025 – Present

- Designed and implemented a **sensor fusion system** combining **UWB ranging** and **inertial measurements** for indoor localization for indoor robotics applications
- Developed an **Modelled and tuned Error State Kalman Filter (ESKF)** for real-time sensor fusion of IMU and UWB data and implemented algorithm in C and physical hardware module
- **Designed MCU PCB** with DWM3000 UWB module and MEMS IMUs and integrated sensor fusion algorithm

Two-Stage CMOS Operational Amplifier Design | *Cadence Virtuoso, CMOS, Analog IC Design* — Dec 2026

- Designed and simulated a **two-stage CMOS operational amplifier** in a **45 nm process** using Cadence Virtuoso
- Implemented a **fully differential first stage with common-mode feedback (CMFB)** and a **common-source second stage**
- Achieved **47.5 dB DC gain**, **616 MHz unity-gain frequency**, and **61° phase margin** under strict power requirements
- Performed **DC, AC, and transient analysis** including slew-rate, step response, and stability verification

Technical Skills

Software: C, Python, MATLAB, System Verilog, 8051 Assembly, ARM Assembly, JSON
Electrical: Altium, Cadence, PSIM, KiCad, LTspice, SolidWorks, Logic Analyser, Function Generator, Oscilloscopes
Development Tools: Git, Azure, Simulink, STM32 CubeIDE, Quartus, VS Code, Power BI, TensorFlow, PyTorch