Bilal Dawood

+1 587-429-7635 | Website | LinkedIn | Github | Email | Calgary, AB

Education

University of Calgary Calgary, AB
BSc in Electrical Engineering, Minor in Digital Engineering — GPA: 3.64 *Aug. 2019 – May 2024*
Coursework: Digital Systems Design, Advanced Software Design and Development, Analog Electronic Circuits

Experience

Systems Engineer and Researcher Sep 2023 – Present
University of Calgary *Calgary, AB*
- Led the design and development of an automated Linux based enforcement system for bus-only lanes, integrating hardware and ML model to enhance public safety and optimize transit operations.
- Achieved **36% reduction in power consumption** by embedded programming and sensor integration using **Python**.
- Designed multi-purpose **hardware enclosure** using **SOLIDWORKS** for both in-bus and on-street application.
- Performed extensive **testing** to ensure system reliability and performance under various conditions.
- Prepared documentation outlining **technical specifications**, performance and actionable insights for future implementation.

Digital Hardware Engineer (Intern) May 2022 – Aug 2023
Ericsson Canada Inc *Ottawa, ON*
- Achieved **70% reduction** in thermal verification time by developing an automation tool in **Python**.
- Ensured accuracy of automation tool by **debugging** and creating **test cases** and recording results using **Excel**.
- Delivered technical presentation to hardware teams, leading to successful company-wide tool adoption.
- Verified the **signal integrity** and **timing compliance** of I/O operations on radio boards by utilizing **Cadence schematics**, sending commands via **PuTTY**, and recording **oscilloscope measurements**.
- Ensured **electrical functionality** by conducting **power rail analysis** on high voltage radio boards using **multimeter**.

Android SDK/NDK Full-Stack Developer (Intern) Feb 2023 – Aug 2023
Ericsson Canada Inc. *Ottawa, ON*
- Developed an Android app using **JavaScript, React Native and C/C++**
- Enhanced backend data management by **57%** for app by creating 4 new classes in **JS** and off-loading 80% of the data.
- Reduced page load times by **90%** by implementing **infinite scrolling**, showcasing expertise in software optimization.

Projects and Courses

Real-time Audio Filtering | *C, ARM Assembly, STM MCU, Embedded Systems* Jan 2024 – May 2024
- Designed and optimized embedded **real-time audio filter** on the STM32F411 using **C and ARM Assembly**.
- Reduced filter sampling rate by **28**% and reduced program size by **13.6%** by utilizing **Assembly and buffers**
- Analyzed **ARM assembly** to identify bottlenecks and **optimize code** efficiency, reducing instruction count.

SolarCam | *Embedded Systems, Solar Powered, C++* Jan 2022 – May 2022
- Developed an **ESP32-microcontroller** based solar powered security camera.
- Designed a self-sustaining power system with solar charging, battery storage, and regulated voltage.
- Ensured adherence to relevant regulatory codes (ISO, CEC) for product quality, safety, and environmental considerations.

AM Receiver System Design | *Analog Circuit Design, Multisim, Simulation* Oct 2021 – Dec 2021
- Designed and implemented an AM receiver system in **NI Multisim**, focusing on analog circuit design and signal processing.
- Developed active filter and base-band amplifier circuits for improved signal clarity.
- Used parametric sweeps and **AC analysis** to optimize circuit performance.
- Documented the design, methodology, results, and analysis of the projects in detailed reports.

Altera DE10-Lite Distance Sensor | *VHDL, Intel Quartus Prime, MODELSIM, FPGA* Sep 2021 – Dec 2021
- Implemented voltage-to-distance conversion in VHDL using Intel Quartus Prime.
- Created **testbenches** to conduct tests and simulate digital signals and switch gates to be verified using **MODELSIM**.
- Configured DE10 display for distance/voltage based on switch state.
- Demonstrated proficiency in **FPGA programming**, sensor integration, highlighting skills in hardware design and testing.

Technical Skills

Hardware Tools: Thermocouple, Oscilloscope, Spectrum Analyzer, Multimeter, Solder, Power Supplies
Design and Simulation: Cadence Allegro, MODELSIM, NI Multisim, SOLIDWORKS, Intel Quartus Prime, SIMULINK
Languages: VHDL, Java, Python, C/C++, MATLAB, JavaScript, HTML/CSS, Assembly (ARM, MIPS)
Frameworks: React, Node.js, Flask, FastAPI, Tensorflow, PyTorch
Developer Tools: Git, Gerrit, Linux, PuTTy, MS Azure, VS Code, PyCharm, Jira
Libraries: Pandas, NumPy, Matplotlib, Seaborn, Tkinter, Keras, OpenCV, Pillow, Scikit-learn

Awards

Jason Lang Scholarship(2020, 2021, 2023), **Dean's List**(2020, 2021, 2024)