Bilal Dawood

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

Education

University of Calgary Calgary, AB
BSc in Electrical Engineering, Minor in Digital Engineering — GPA: 3.64 *Aug. 2019 – May 2023*

Experience

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 using Python.
- Ensured accuracy by creating test cases and comparing recorded metrics manually with component datasheets.
- Showcased documentation and presentation skills by preparing user manual and presenting results to other teams.
- Ensured electrical functionality by verifying power rail integrity on high voltage radio boards using Power Tree and multimeter.
- Confirmed data transfer compliance by identifying and recording Flash timing parameters using Oscilloscope and PuTTY.
- Supported PCB design verification using Cadence Allegro by leveraging existing radio board schematics.

Android SDK/NDK Full-Stack Developer (Intern) Feb 2023 – Aug 2023
Ericsson Canada Inc. *Ottawa, ON*

- Enhanced backend data management by 57% for application by creating 4 new classes and off-loading 80% of the data.
- Increased UI functionality by incorporating filters.
- Reduced loading times by 90% by replacing batch loading with infinite scrolling and removing redundant functions.

Projects

Automated Transit Enforcement | *Python, Git, Hardware and Software Development* Sept 2023 – May 2024

- Developed hardware and software solution to combat transit violations.
- Reduced power consumption by 36% by developing a proof-of-concept with RPi and sensors (LiDAR, GPS, camera)
- Reduced memory utilization and processing time by 800% by setting appropriate triggers through embedded designing
- Achieved 93% mAP vehicle detection by utilizing YOLOv8 object tracking model with data collected and labeled locally.
- Regularly shared progress with Calgary Transit, explaining tehcnical details in easy to undestand manner.

Real-time Audio Filtering | *C, ARM Assembly, STM MCU, Embedded Systems* Jan 2024 – May 2024

- Designed and implemented embedded real-time audio filter on the STM32F411 using C.
- Reduced filter sampling rate by 28% and reduced program size by 13.6% by utilizing ARM Assembly instructions.
- Implemented and compared various FIR filtering techniques (Circular Buffer, Block Processing).
- Compared performance (speed, memory usage, program size) and verified integrity of filter after implementation.
- Created Python notebook to compare and verify performance of signal after filtering.

UnderPressure Posture Corrector | *C++, Embedded Systems, Agile, Product Development* Jan 2021 – May 2021

- Developed an Arduino-based posture corrector using an Arduino Nano, resistive strips, and a speaker.
- Utilized Altium to prepare circuit design before implementing in hardware
- Applied voltage dividers and utilized C++ and Arduino IDE for embedded programming.
- Implemented Agile project management methodologies (sprint and scrum) for efficient development.
- Received awards for "Most Innovative Product," "Best Marketing," and "Best Use of Humor."

SolarCam | *Embedded Systems, Solar Powered, C++* Jan 2022 – May 2022

- Developed an ESP32-microcontroller based solar powered security camera.
- Successfully sourced and integrated electrical components including solar panels, ESP32, PIR sensor, and camera module.
- Controlled GPIO pins using C++ to capture and save images.
- 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.

Technical Skills

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

Awards

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