Bilal Dawood

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Education

University of Calgary Calgary, AB

BSc in Electrical Engineering, Minor in Digital Engineering — GPA: 3.64 *Aug. 2019 – May 2024*

Coursework: Computer Network, Advanced Software Design and Development, Intro to Communications Systems and Networks
Awards: *Jason Lang Scholarship* (2020, 2021, 2023), *Dean's List* (2020, 2021, 2024)

Experience

Digital Hardware Engineer (intern) May 2022 – Aug 2023

Ericsson Canada Inc *Ottawa, ON*

- Achieved 70% reduction in Thermal verification time by designing and developing a test automation tool using Python.
- Integrated thermal analysis by comparing extracted pixel values with component thermal characteristics.
- Created test cases to verify and debug tool output, showcasing analytical and debugging skills.
- Delivered technical presentation to hardware teams, leading to successful tool adoption.
- Ensured electrical functionality by verifying power rail integrity on high voltage radio boards using multimeter.
- Conducted board electrical verification, accurately identifying and recording 8 Flash timing parameters using Oscilloscope.

Android SDK/NDK Full-Stack Developer (Intern) Feb 2023 – Aug 2023

Ericsson Canada Inc. *Ottawa, ON*

- Developed and optimized an Android app using JavaScript, React Native, C++, and C.
- Managed tasks with Jira and ensured code quality through continuous debugging and peer reviews using Gerrit.
- Reduced page load times by 90% by implementing infinite scrolling, showcasing expertise in software optimization.
- Collected and analyzed 5G performance metrics (throughput, error rate) contributing to app development.

Projects and Courses

Automated Transit Enforcement | *Python, Git, Software Dev, Hardware Dev, OpenCV* Sept 2023 – May 2024

- Led hardware and software design of an automated enforcement prototype for Calgary Transit, improving transit efficiency by 8%.
- Reduced power consumption by 36% and memory utilization by 800% by reading serial data from sensors (LiDAR, GPS, camera) and implementing efficient triggers with a Python script on an RPi running Linux.
- Performed extensive testing to ensure system reliability and performance under various operational conditions.
- Regularly shared progress with Calgary Transit, explaining tehcnical details in easy to undestand manner, showcasing strong oral and written coomunication skills.

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

- Designed, implemented 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 optimization techniques.
- Met 8KHz timing constraints for optimized functions, ensuring suitability for real-time applications.
- Analyzed ARM assembly to identify bottlenecks and optimize code efficiency, reducing instruction count.
- Analyzed and compared performance (speed, memory usage) and verified filter integrity using Python Notebook.

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.
- Applied voltage dividers and utilized C++ and Arduino IDE for embedded programming.
- Implemented Agile project management methodologies (sprint and scrum) for efficient development and teamwork.
- Received awards for "Most Innovative Product," "Best Marketing," and "Best Use of Humor."

Computer Networks | *Problem Solving, Mathematical Analysis, Team work* Sept 2023 – Dec 2023

- Learned about packet routing techniques, protocols and network architectures.
- Explored transport layer protocols, application layer services and data and network security principles.

Technical Skills

Languages: VHDL, Java, Python, C/C++, MATLAB, JavaScript, HTML/CSS, Assembly (ARM, MIPS)
Developer Tools: Git, Gerrit, Linux, PuTTy, MS Azure, VS Code, PyCharm, Jira
Design and Simulation: Xilinx Vivado, Intel Quartus Prime, Cadence Allegro, MODELSIM, NI Multisim. SIMULINK
Hardware Tools: Oscilloscope, Spectrum Analyzer, Multimeter, Solder, Power Supplies, STM MCU, Pynq Z2 FPGA, PIC MCU
Libraries: Pandas, NumPy, Matplotlib, Seaborn, Tkinter, Keras, OpenCV, Pillow, Scikit-learn