

# Bilal Majeed

COMPUTER ENGINEER · FIRMWARE DEVELOPER

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## Qualifications

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<b>Languages</b>	C, C++, Python, Java, FreeRTOS, QNX, ARM Assembly, VHDL/Verilog, MATLAB, LabVIEW
<b>Tools/Protocols</b>	Buses (CAN, LIN, UART, SPI, I2C), IPC (pipes, FIFO, message passing, shared memory), Git
<b>Hardware</b>	MCUs (PIC, AVR, ARM), MPC5748G, ATmega328P, IMX6, TM4C123G LaunchPad (ARM Cortex-M4), Raspberry Pi
<b>Knowledge/Skills</b>	FPGAs, Bootloaders, Compilers, Embedded Web Development, HW & SW Debugging

## Experience

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### NUVATION ENGINEERING

Waterloo, Ontario

EMBEDDED SOFTWARE DEVELOPER

Sept 2018 - Dec 2018

- Designed and implemented a FreeRTOS firmware for a propitiatory optical polarity tester utilizing laser and optical sensors to test the polarity of fiber optic cables and technology
- Designed a centralized priority driven event router that takes incoming messages from various user tasks (web interface, touch screen GUI, VISA SCPI commands, etc.) routing them in order with priority to their appropriate tasks
- Implemented drivers and APIs for components such as I/O expanders, I2C and SPI buses to communicate and control various proprietary hardware and monitor their states
- Wrote integrated scripts and firmware logic to calibrate optical sensors and actuators
- Helped design a Hardware-in-the-Loop (HIL) automated testing system that would simulate firmware in real world scenarios whenever the code base is updated using GitLabs, Jenkins and Robot Framework unit testing
- Wrote detailed and comprehensive software design, requirement and test plan documents detailing the firmware and its usages to clients

### MOLEX ELECTRONIC SOLUTIONS

Waterloo, Ontario

FIRMWARE DEVELOPER

Sept 2017 - Jan 2018

- Developed an in-vehicle network gateway switch which was demoed at CES 2018
- Created a flash bootloader for the MPC5748G microcontroller for OTA firmware upgrades through CAN and Ethernet
- Implemented CAN and LIN functionalities on the MPC5748G controller enabling communication between various vehicle components and the gateway switches
- Integrated CAN packet routing in the MPC5748G controller, routing UDP frames to their appropriate CAN/LIN controllers using packet header
- Setup a web server on the IMX6 board using QNX to allow for external access of the board, used for demoing purposes
- Performed rigorous functional testing on a proprietary automotive media module examining Apple CarPlay and Android Auto functionalities

### FLEX AUTOMOTIVE SOLUTIONS

Markham, Ontario

SOFTWARE ENGINEER

Jan 2017 - Apr 2017

- Lowered the risk of failure of actuators on the Ford liftgate modules by developing sensor data visualization using the vehicle's CAN bus and manipulating stress testing logs
- Prototyped Apple CarPlay solutions using the Atmega328p chip with AVR to implement UART serial communication capabilities
- Resolved button debouncing issues on production line tester boards by implementing robust software solutions
- Participated in board bring up (testing PCBs insuring full code functionality and validating hardware implementations)
- Increased testing automation and coding efficiency by 40%, analyzing and integrating various development tools (i.e. version control tools, ALM tools, requirement management infrastructures)

### VERIDAY

Mississauga, Ontario

FULL STACK DEVELOPER

May 2016 - Aug 2016

- Migrated 1,000+ client sites to a proprietary content management system by creating data scrapping applications using Java and Selenium
- Implemented regular expressions and parsing logic as necessary to provide robust analysis of third party data
- Achieved higher product quality by providing metrics of the data migration solutions through standalone Java web applications

**FLIPP**

SOFTWARE DEVELOPER

*Mississauga, Ontario**Sept 2015 - Dec 2015*

- Created dynamic online flyers used by 1,000,000+ users through the Rails framework with JavaScript
- Improved internal work flows and performance by implementing Rake tasks and Ruby scripts
- Coordinated projects with clientele gaining extensive experience of shipping and maintaining applications with larger user bases

**ONTARIO TEACHERS' PENSION PLAN BOARD**

SOFTWARE DEVELOPER

*Toronto, Ontario**Jan 2015 - Apr 2015*

- Worked in a fast paced work environment creating programs and maintain databases
- Developed database procedures and functions to define user access roles
- Created detailed XML web services using TIBCO BW to pull IT related requests from the IT Help database

**Education**

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**University of Waterloo**

B.A.S IN COMPUTER ENGINEERING

*Waterloo, ON, Canada**Sept. 2014 - Exp. Apr. 2019*

- Received President's Scholarship