Michael **Woods, P.Eng.**

Electronics and Software Engineer

604-353-1163 | michaelthomaswoods@gmail.com | phlagg | michael-woods-peng

Skills

Languages	C/C++, Embedded C, Python, IEC 61131-3
Microcontrollers	STM32F4, Atmega32U4, Atmega16L, ESP32/8266
Protocols	RS232, RS485, SPI, I2C, CAN 2.0B, SAE J1939
Testing/Debugging Tools	CANAlyzer, Oscilloscope, Logic Analyzer, GDB
Tools/Software	STM32CubeIDE, Visual Studio CMAKE, Altium Designer, GIT/SVN/Perforce, Arch Linux

Experience

Embedded Applications Engineer

Port Coquitlam, BC

Eaton - eMobility Wireless

Jun. 2023 - Present

- Developed embedded applications for wireless controller and receiver products in embedded C and C++.
- Developed low level device drivers for a new receiver product - ADC, I2C, GPIO.
- Documented, investigated and fixed bugs in the firmware and embedded software of existing products.
- Performed code reviews, testing, and validation, ensuring software meets safety-critical standards.
- Helped develop next generation of wireless controller products from voice-of-customer and requirements gathering, through to detailed design execution.
- Authored and maintained configuration and testing software tools in VB.NET and Python.
- Utilized CANalyzer to develop and test CAN bus applications.

Environment: *C, C++, Python, Atmega16L Controller, STM32F4 Controller, ProconOS, J1939 CANBus, Opus Make*

Director of Electrical R&D

North Vancouver, BC

Novarc Technologies, Inc.

Mar. 2021 - Mar. 2023

- Created the proof of concept hardware and embedded software required to port our vision system and proprietary AI control to a 3rd party robotic welding apparatus.
  - Develop the firmware for low-level device drivers, including GPIO, UART, and I2C.
  - Developed the software for the CAN 2.0A message handling, motion control functions, SPI accelerometer interface and control system in C++.
  - The firmware/software was deployed to an Atmega32U4 based CAN development board to achieve the required motion control functions.
- Established the PCB design capability within the R&D and Engineering groups, including QA/QC and testing procedures.
- Guided the electrical and controls architecture and design requirements of the next generation products.

Environment: *C, C++, Atmega32U4 Controller, J1939 CANBus*

Electrical Systems Engineer

Burnaby, BC

Ballard Power Systems

Mar. 2020 - Mar. 2021

- Led the design of a CAN bus based hydrogen fuel cell voltage measurement device for use in a 1500VDC generation system. Developed schematics, BOM and PCB layout in Altium Designer.
- Designed and built a test apparatus to validate PCB re-work. Programmed test suite in IEC 61131-3 Structured Text for deployment to STW ESX controllers.
- Developed AC&DC design specs, drawings, and calculations, for a 1.5MW stationary fuel cell generator intended for export to European markets.
- Investigated component failures on automotive fuel cell products to determine root cause and develop design solutions.

Environment: *C, IEC 61161-3, STW ESX Controller, dsPIC33 Controller, CANBus*

Electrical Engineer / Project Manager

Vancouver, BC

Vard Electro Canada

Jul. 2017 - Mar. 2020

- Developed and executed the electrical scope (estimated at $1.5M) of a project to retrofit a class of medium icebreakers for the Canadian Coast Guard.
- Managed a team of 7 engineers and designers on the fast- tracked detailed design phase of the project.
- Effectively communicated project scope, schedule, and budget with lead engineers.
- Reviewed weekly and monthly reports to track key performance metrics.

Electrical Systems Engineer(Contract)

North Vancouver, BC

Seaspan Vancouver Shipyards

Jun. 2016 - Jul. 2017

- Collaborated with an integrated project team to develop product requirements which met client performance specifications and complied with classification society (DNVGL) regulations.
- Responsible for performing reviews of electrical, electronic and communications systems design products to ensure technical accuracy and adherence to client and company standards.

Electrical Engineer(Contract)

Vancouver, BC

Allnorth Consultants

Jun. 2015 - Jun. 2016

- Performed AC load and short circuit studies as well as modelled LV and MV systems in EasyPower.
- Analyzed power factor of new and existing plant and provided recommendations for improvement.

Electrical Engineer

Vancouver, BC

Amec Foster Wheeler

Jun. 2012 - Jun. 2015

- Telecommunications system engineer tasked with system topography and detailed design including fibre optic communications system, telecommunications hardware, revenue metering and video surveillance system.

Junior Engineer

Burnaby, BC

Autopro Automation

May 2011 - Jun. 2012

- Assisted senior engineers with the design of control and automation systems for industrial plants.

Education

The University of Calgary

Calgary, Alberta

B.Sc. in Electrical Engineering

2006 - 2010

- Senior research project investigating the use of passive multi-band microwave networks in a low power SDR down conversion architecture.
- Conference Paper: *Bugo, T., Klippenstein, B., Saizew, M., Woods, M., Helaoui, M. (2010) Dual-Band Receiver Using Passive Six-Port Down-Conversion Technique Suitable for Multi-Standards and SDR Applications. Conference Proceedings of Asia-Pacific Microwave Conference (TH3G-12). Yokohama, Japan. December 7-10, 2010.*

Professional Memberships

Engineers and Geoscientists BC

British Columbia

Professional Engineer (P.Eng.)

2016 - PRESENT