

# Matthew Di Nardo

3A Electrical Engineering

196 The Westway  
Toronto, Ontario, M9R1E6

647-231-6414 (Cell)  
mj2dinar@uwaterloo.ca

## SKILLS

- **Programming Languages:** Assembly, C, C++, Java, Python, VHDL.
- **Software tools and IDE:** Git, SVN, GCC, GDB, Eclipse, Vim, Quartus II, CodeComposer Studio.
- **EDA software:** Altium Designer, Cadsoft EAGLE, LTSPICE.
- **Software platforms:** Linux, Windows, QNX RTOS.
- **Hardware platforms:** AVR (8/16bit), ARM (16/32bit), MSP430, Cyclone IV FPGA.
- **Software design:** Embedded systems, real-time operating systems, hardware drivers, automation utilities.
- **Hardware design areas:** High speed analog & digital, high power, high voltage (240VAC mains), Power Factor Correction, EMI minimization, digital communication (I<sup>2</sup>C, SPI, UART, RS-232), transmission lines.
- **Hardware design:** Circuit design, circuit prototyping, schematic capture, PCB layout, electromechanical and systems design.
- **Electrical equipment:** Oscilloscopes, multimeters, power meters, reflectometers.
- Proficient self-learner, can handle large projects independently and with a team.

## WORK EXPERIENCE

Hardware Designer                      Ecologix Heating Technologies (January – April 2016)

- Lead hardware designer several projects, including an HVAC system power supply with power factor correction and a universal LCD keypad front-end board.
- Designed circuits, schematic, and PCB layout using EAGLE.
- Selected components, sourced components, and minimized design costs.
- Tested, debugged, and repaired faulty boards.

Hardware/Software Developer              Clear Blue Technologies (May – September 2015)

- Developed custom hardware and software for an automated calibration system.
- Hardware prototyping, schematic creation, PCB layout, sourcing components, preparing designs for manufacturing.
- Developed software to control the calibration system hardware and used existing APIs to integrate the system with the company's cloud platform.

Agile Software Engineering                      Pivotal Labs (September – December 2014)

- Developed application level software for several projects on various platforms, including iOS, Android, and Blackberry 10.
- Utilised Agile software development techniques such as Pair Programming, Extreme Programming and Test Driven Development (TDD).

Embedded Software Designer

BlackBerry (January – April 2014)

- Developed and debugged driver software for BlackBerry 10 devices running C/C++ based QNX Neutrino RTOS.
- Wrote software that recorded sensor data for statistical analysis.
- Began work on restructuring touch input drivers to simplify future development.

## **DESIGN PORTFOLIO**

Schematics and additional images available upon request.

### **GoPro Controller (GPC)**



Figure 1 – GoPro Controller (GPC)



Figure 2 – GPC connected to GoPro

A two board system to control a GoPro camera through its HeroBus interface. Designed for the Waterloo Aerial Robotics Group (WARG). Primary goal was to enable their UAV's main board to sync its vision system with its GPS location during flight. Features an ATMEGA328p MCU, SPI control, ISCP programming, SD card slot, and an auxiliary power supply for peripherals.

### **Automated Testing and Calibration System (Drone)**



Figure 3 – Drone Control Board



Figure 4 – Drone Power Board

Designed for Clear Blue Technologies Inc. to test and calibrate their product after assembly (power channel control and sensing). Designed as a BeagleBone Black cape and to fit into a discreet off the shelf enclosure. Features 6 power channel test outputs with reverse polarity protection at up to 20A/channel, and an RS-232 transceiver with jumper-selectable voltages for controlling an external programmable PSU.