Erik C.M. **Johnson**

Engineer in Training · Electronics, Computation and Systems

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Education

Carleton University
Ottawa, Ontario, Canada

B.Eng in Electrical Engineering (Minor in Mathematics) — *Sept. 2012 - Present*

- Currently completing last year of studies
- CGPA of 11.78 / 12 (A+) or GPA of 3.97 / 4
- Five four month co-op work terms completed

Work Experience

Carleton University
Ottawa, Ontario, Canada

Mathematics Teaching Assistant — *Sept. 2015 – June 2016*

- Led tutorials and offered individual assistance for the courses:
  - MATH 2004 · Multivariable Calculus for Engineering or Physics (Fall 2016)

Fraunhofer IIS (Institute for Integrated Circuits)
Erlangen, Bavaria, Germany

Music/Audio Processing Research Intern — *May 2016 – August 2016*

- Contributed to an open source library (mir_eval) used by music/audio researchers by adding additional evaluation metrics and improving performance
- Investigated methods for improving performance of math-intensive python code, including code refactoring and GPU optimization

Carleton University
Ottawa, Ontario, Canada

Mathematics Teaching Assistant — *Sept. 2015 – June 2016*

- Led tutorials and offered individual assistance for the courses:
  - MATH 2004 · Multivariable Calculus for Engineering or Physics (Fall 2015)
  - MATH 2107 · Linear Algebra II (Winter 2016)

GasTOPS, Ltd.
Ottawa, Ontario, Canada

Electronics Product Design Intern — *May 2014 – August 2015*

- Developed automated tests in Python for verifying correct firmware operation of a multiprocessor (Microchip dsPIC33) system
- Tested Modbus RTU and CAN bus 2.0B communication protocols using Python scripts
- Replaced aging spectrum analyzers with a windows application written in C# that controlled a function generator and oscilloscope using the VISA interface
- Specified and executed hardware testing to evaluate the safety of critical components
- Performed a Monte Carlo simulation in Mathematica for design optimization
- Executed test specifications requiring the use of DAQ devices, a thermal control chamber, a thermal shock chamber, a shaker table and automated signal injection devices

Carleton University
Ottawa, Ontario, Canada

Mathematics Teaching Assistant — *Sept. 2013 – April 2014*

- Led tutorials and offered individual assistance for the courses:
  - MATH 1104 · Linear Algebra for Engineers and Scientists (Fall 2013)
  - MATH 2004 · Multivariable Calculus for Engineering or Physics (Winter 2014)

Virtual Ventures
Ottawa, Ontario, Canada

Weekend Camp Instructor — *Jan. 2014 – Feb. 2014*

- Educated future scientists and engineers in grades 7-10 on the topic of electronics and programming using the Arduino open-source microcontroller system

Department of Electronics - Carleton University
Ottawa, Ontario, Canada

Electronics Research Intern — *May 2013 – August 2013*

- Assisted in the ongoing design, assembly and testing of an Atmel microcontroller (ATmega1284p) device resulting in a newly released revision of the PCBs
- Designed footprint designs in gEDA for new component sensors (e.g. BMP180, MPU6050)
- Developed post-processing software using Python to provide meaningful data visualizations
- Device was later used by other students in their capstone project

Applied Projects

Carleton University *Ottawa, Ontario, Canada*

Carleton CanSat Team Member (Team Raven Knights) *Jan. 2015 - June 2016*

- Resulted in securing 2nd place out of 60 international teams in 2016 and 3rd place out of 42 teams in 2015
- Contributed as software team lead, software developer and electrical team lead for mock satellite competitions
- Developed real time software in C for a Freescale Kinetis (KL16Z128; ARM Cortex-M0+ core) device
- Used Git version control system to maintain team coherence
- Implemented software performing the following functions:
  - Developed the ability to recover from momentary power loss
  - Gathered and transmitted sensor data to a remote ground station
  - Tracked flight state and modified mode of descent based on state
  - Used PID feedback control to maintain constant orientation during descent

Volunteering

IEEE (Institute of Electrical and Electronics Engineers) *Ottawa, Ontario, Canada*

IEEE - Carleton Chapter *Sept. 2012 - Present*

- Held the positions of Secretary, Office Directory and Workshop Director for the Carleton chapter of IEEE
- Organized and prepared the agenda and took minutes for IEEE Carleton executive meetings
- Increased visibility of IEEE in the Ottawa engineering community through outreach events and regular workshops
- Provided academic support services to students in electronics, systems and software courses

Skills

General Computers	Linux, Windows, ROS, EagleCAD, Embedded Linux, Microsoft Office Suite including VBA in Excel
Programming	Python, Git, C/C++, C#, Verilog, LaTeX, MATLAB, Java, VBA, Mathematica
Communication Protocols	I2C, SPI, UART, CAN bus 2.0B, Modbus RTU (over RS485)
Test Instruments	Oscilloscope, Logic Analyzer, Function Generator, Spectrum Analyzer