Erik C.M. **Johnson**

Engineer in Training · Electronics, Computation and Systems

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Objective

My objective is to contribute to the application of robotics to everyday life. To further this objective I am seeking employment in the robotics industry in order to use and expand my technical skills.

Education

Carleton University

Ottawa, Ontario, Canada

B.Eng in Electrical Engineering (Minor in Mathematics)

Sept. 2012 - Present

- Currently completing last year of studies, graduation date: May 2017
- CGPA of 11.83 / 12 (A+) or GPA of 3.98 / 4
- Five co-op work terms completed (total of 20 months)
- Chipworks/Rebekah Proud Memorial Award
- W. R. Davis Engineering Scholarship
- Faculty of Engineering Scholar award
- Carleton Academic Scholarship
- Dean's Honour list 2012-2014, 2016

Work Experience

Carleton University

Ottawa, Ontario, Canada

Mathematics Teaching Assistant

Sept. 2016 – Dec. 2016, Sept. 2015 – April 2016, Sept. 2013 – April 2014

- Led tutorials, offered individual assistance and administered tests for the following courses:
  - MATH 2004 · Multivariable Calculus for Engineering or Physics (Fall 2016, Fall 2015, Winter 2014)
  - MATH 2107 · Linear Algebra II (Winter 2016)
  - MATH 1104 · Linear Algebra for Engineers and Scientists (Fall 2013)

Fraunhofer IIS (Institute for Integrated Circuits)

Erlangen, Bavaria, Germany

Music/Audio Processing Research Assistant

May 2016 – August 2016

- Contributed to an open source library (mir_eval) used by music/audio researchers through adding new evaluation metrics and improving performance resulting in greater accessibility to high quality audio separation evaluation
- Investigated methods for improving performance of math-intensive python code, including code refactoring and GPU optimization

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 reliability of critical components
- Developed a Monte Carlo simulation in Mathematica for design optimization resulting in a streamlined manufacturing process
- 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

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 resulting in increased excitement to pursue studies in STEM fields

Department of Electronics - Carleton University *Ottawa, Ontario, Canada*

Electronics Research Assistant *May 2013 – August 2013*

- Assisted in the ongoing design, assembly and testing of an Atmel microcontroller (ATmega1284p) system resulting in a new revision of the PCBs
- Modified PCB designs in gEDA to add new component sensors (e.g. BMP180, MPU6050) allowing for the device to be used in a wider range of applications including by other students in their capstone project
- Developed post-processing software using Python to provide meaningful data visualizations

Applied Projects

Capstone Engineering Project - First-In Risk Evaluation (F.I.R.E.) System *Ottawa, Ontario, Canada*

Carleton University *Sept. 2016 - Present*

- Designed UAV (quadcopter) system for data collection targeting fire response application
- Interfaced high level application with open source UAV control software (Arducopter) and sensors (e.g. camera, thermal imaging) using ROS on an embedded Linux platform (Raspberry Pi)
- Researched and experimented with photogrammetry (3D model generation from images)

Carleton CanSat Team (Raven Knights) *Ottawa, Ontario, Canada*

Carleton University *Jan. 2015 - June 2016*

- Led software development team in 2015 and electrical team in 2016 for mock satellite competition
- Developed real time embedded software in C for an NXP Kinetis (KL16Z128; ARM Cortex-M0+ core) device
- Secured 2nd place out of 60 international teams in 2016 and 3rd place out of 42 teams in 2015
- Used Git version control system to maintain team coherence
- Implemented software performing the following functions:
  - Gathered and transmitted sensor data to a remote ground station
  - Tracked flight state and modified mode of descent based on state
  - Recovered state and calibration from momentary power loss
  - Used PID feedback control to maintain constant orientation during descent

Freescale Cup 2014 (now NXP Cup) *Ottawa, Ontario, Canada*

Carleton University *Oct. 2013 - April 2014*

- Developed real time embedded software in C for an NXP Kinetis (KL25Z128; ARM Cortex-M0+) device
- Implemented a driver for servo steering control allowing for easy algorithm implementation
- Collaborated on the design of an efficient vision and motion planning algorithm

Volunteering

IEEE - Carleton Student Branch *Ottawa, Ontario, Canada*

Carleton University *Sept. 2012 - Present*

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

Skills

General Computers	Linux, Windows, Embedded Linux, Microsoft Office Suite including VBA in Excel
Programming Languages & Tools	Python, Git, C/C++, ROS, C#, LaTeX, Bash, Verilog, MATLAB/Simulink, Mathematica, Java, VBA
Communication Protocols	I2C, SPI, UART, CAN bus 2.0B, Modbus RTU (over RS485), Ethernet, TCP/IP
Test Instruments	Oscilloscope, Logic Analyzer, Function Generator, Spectrum Analyzer
Design & Simulation Software	Codewarrior IDE, Visual Studio, EagleCAD, Keil (μVision IDE), Simulink, gEDA, OrCAD, Inkscape