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Benjamin Turnbull, B.Sc.(Eng.), M.Math

Career Objective: Full-stack developer specializing in security and the internet of things.

Coding Skills

Programming Languages: Ruby, Javascript, C, C++, Python, MATLAB, R, FORTRAN

Computer Aided Design: COMSOL, DraftSight, LEdit, Hyper Works, Solid Edge

Platforms: Linux, Windows, Unix, Raspberry Pi, Arduino and other AVR

Protocols: HTTP, OAuth2, SQL, UART, SPI, AT commands

Imaging (Medical): MINC tools, VNMRJ MRI controller programming, proprietary image registration software

Imaging (NDT/NDE): UTEX UT 340, Olympus OmniScan, Olympus Nortec, Eddyfi arrays, and other eddy current

Other: Rails, HTML, CSS, LaTeX, Simulink, Labview, open-source software, Microsoft products

Work Experience

Web Developer

General Assembly Bitmaker, Toronto ON, March 2017 – May 2017

- Completed immersive 9 week full-stack web development course.
- Coded most of the back-end for the final group project, including the integration of 8 social networking APIs. (Alpha version deployed at **https://unid-app.herokuapp.com**)
- Projects and assignments uploaded to **https://github.com/quantumduck**

Independent Contractor

Materials Research Institute, Waterloo, ON, March 2016 – June 2016

- Designed ultrasonic material analysis software in Microsoft Excel.
- Created a simple, but flexible interface for advanced time and frequency analysis.
- Consulted on technical issues relating to attenuation and phase dispersion of ultrasound signals.

Engineering Resource

Eclipse Scientific, Waterloo, ON, June 2015 – August 2015

- Completed training courses for state-of-the-art ultrasonic and eddy current testing procedures.
- Supervised placement of simulated defects in weld overlay samples.
- Operated manual and computer-controlled NDE equipment.

Research Experience

University of Toronto Ultrasonic Non-Destructive Evaluation (NDE) Lab

Toronto, ON, September 2014 – February 2016

Project: Data fusion techniques for non-destructive testing of corrosion resistant alloy weld overlays.

Summary: Investigated and evaluated latest multi-sensor data fusion techniques for use in NDE; Redesigned submerged turntable for ultrasound immersion tank, resulting in smoother operation.

Toronto Centre for Phenogenomics Mouse Imaging Centre

Toronto, ON, October 2013 – April 2014

Project: Determining the effect of radiation on brain development in young mice to improve outcomes of early treatment of brain tumors or leukemia.

Summary: Designed and performed behavioural experiments; transferred animals safely into and out of clean room facility; coded and successfully ran MRI pulse sequence for T2 relaxometry on real-time controller; performed statistical analysis.

Dalhousie University Micro-Electro-Mechanical Systems (MEMS) Lab

Halifax, NS, September 2011 – April 2013

Project: Detecting small resonance frequency shifts using spatial Fourier analysis of vibrating MEMS.

Summary: Designed micro-scale vibrating motors using photolithography; Correctly predicted resonance characteristics of MEMS devices using a finite element model; Collaborated with lab members on various designs, resulting in increased layout density.

Education

M.Math, Applied Mathematics

University of Waterloo, Waterloo, ON, September 2007 – September 2010

Thesis: Stability of Impulsive Switched Systems in Two Measures

B.Sc., Mathematics and Engineering (Applied Mechanics)

Queen's University, Kingston, ON, September 2003 – April 2007

Academic Awards:

- NSERC Industrial Postgraduate Scholarship (2014 − 2015)
- Dalhousie Engineering Excellence Graduate Scholarship (2012)
- NSERC Alexander Graham Bell Canada Graduate Scholarship (2007 − 2009)
- Queen's University Chancellor's Scholarship (2003 − 2007)

Teaching Experience

Teaching Assistant

Various part time TA positions held at Queen's University (2005 – 2007), the University of Waterloo (2007 – 2010), Dalhousie University (2012 – 2013), and the University of Toronto (2015)

- Delivered substitute lectures for 3rd year machine design (approx. 30 students)
- Led tutorial and lab sessions for 1st, 2nd year calculus (30 – 100 students); 3rd year machine design (approx. 40 students); 3rd year kinematics and dynamics of machines (approx. 200 students)
- Assisted students with assignments in one-on-one or group sessions (1st, 2nd year calculus; 3rd year kinematics and dynamics of machines)
- Marked assignments, tests, and exams (various courses)

Volunteer Experience

Bicycle Mechanic, Bike Pirates

Toronto, ON, March 2014 – present

- Building, servicing, repairing, and customizing bicycles using mainly refurbished components.
- Instructing participants on safety and proper use of tools in DIY workshop.
- Collaborating on policy decisions to ensure continued success of 100% volunteer-run organization.