

# BRIAN SINCLAIR

Systems Design Engineering Graduate

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## EDUCATION

University of  
Waterloo  
2009 – 2014

### B.A.Sc. Honours Systems Design Engineering – Waterloo, Ontario

Centering on finding holistic, interdisciplinary approaches to solving complex problems with a focus towards product development, and software design.

## EXPERIENCE

Deloitte

May 2013 – Aug 2013

### Business Technology Analyst – Vancouver, Ontario

Responsible for the development of: functional and non-functional requirements, a detailed cost estimation model, and vendor scoring models to be used in the selection of a multi-faceted vendor implementation. Became highly detail oriented through continuous creation, development, and presentation of front-facing client deliverables.

Morgan Solar Inc.

Sep 2012 – Dec 2012

### R&D Engineering Intern – Toronto, Ontario

Constructed SQL database for field energy production data as a utility for: product design, deployment design, and marketing. Sculpted various Python scripts to automate daily data collection and database population. Utilized optimization techniques with a feedback system to find optimal power of tracker-mounted solar panels.

Achievers

May 2011 – Aug 2011

### Software Developer – Toronto, Ontario

Aided in the optimizing of numerous SQL database queries for product newsfeed with behavior similar to Facebook's. One of two lead developers on program upgrades from Java based platform to a PHP platform as well as being responsible for the development and maintenance of a user Dashboard.

OpenText Corp.

Sep 2010 – Dec 2010

### Proposal Development Assistant – Waterloo, Ontario

Designed and coded macros in VBA, that were utilized to optimize slow processes. Worked with relevant Subject Matter Experts across all departments to create and publish new content for use in proposals. Maintained corporate knowledge database containing more than 1,000 Q&A's to be used companywide, in answering customer inquiries.

General Dynamics  
Canada

Jan 2010 – Apr 2010

### Systems Design Engineer – Ottawa, Ontario

Adapted quickly to new software environments while aiding the design and testing process of the CH-148 Cyclone helicopter. Formed analysis on many engineering requirements to be delivered to the customer. Conducted many meetings in finalizing and tweaking highly technical engineering requirements for the helicopter project.

## SKILLS & TOOLS

Skills

Optimization, Constraint Programming, Statistical Learning, Data Analysis, Digital Control

Tools

Matlab, Python, SQL, LabVIEW; as well as past experience in C++, Java, and PHP

Courses

Machine Intelligence, Pattern Recognition, Linear Systems & Signals, Data Structures & Algorithms, Optimization & Numerical Methods, Design Optimization under Probabilistic Uncertainty, Probability & Statistics, Multivariable Controls, Digital Control

## PROJECTS & AFFILIATIONS

### Machine Intelligence

Jan. 2014 – April 2014

#### NCAA March Madness Tournament Prediction

A multi-layer, feedforward artificial neural network, trained using back-propagation, was used to simulate and predict the results of the NCAA basketball tournament. Implemented in Python, the neural network was used to not only predict all match-ups in a given tournament, but also to predict the probabilities associated with an individual game. A log-loss model was then used as an additional benchmark for the approach.

### Optimization

Jan. 2014 – April 2014

#### Betting Strategies for NCAA March Madness Brackets

Probabilistic optimization techniques were used to maximize return on investment for an individual to bet on the tournament by means of probabilities derived from my neural net model. This was accomplished by extending methods from both Mean-Variance Modern Portfolio Theory, and Dynamic Programming.

### You-Lock

Sept 2013 – April 2014

#### Lead Mechanical Designer – Waterloo, Ontario

Fourth year capstone design project pertaining to the creation of a self-locking bike rack; using mechanical, electrical, and software design. Responsible for 3D modeling in SolidWorks and mechanical construction. Further developed experience using a microcontroller, sensor, servo motor system.

### Divie

Jan 2013 – Apr 2013

#### Lead Back-End Developer and Project Coordinator – Waterloo, Ontario

A team design project creating a web application for optimizing fair and equitable division of assets in the event of post-mortem estate division. Responsible for PostgreSQL database development, query optimizations, front-end HTML and CSS, and project coordination.

### Fluidyne Engine

May 2012 – Aug 2012

#### Mechanical Designer and Lead Project Coordinator – Waterloo, Ontario

A third year team design project towards building a heat engine following similar principles to that of a Stirling engine utilizing water as an active piston.

### UW Bike Centre

Jan 2013 – Present

#### Bike Mechanic – Waterloo, Ontario

Volunteering to do what I enjoy, fixing bikes or giving advice to those that need it.

## OTHER INTERESTS

### Great Outdoors

Hiking, Rock Climbing, Road Cycling, Canoeing, Surfing, Traveling on a Shoestring

### Engineering

Industrial Design and Modeling, Alternative Energy, Bicycle Project Builds