

Alexander Bailey

CONTACT INFORMATION

E-mail: bailey.alex@gmail.com

EDUCATION

Brock University, St. Catharines, Ontario Canada

M.Sc., Computer Science, October 2013.

- Evolutionary Computation, complex network modelling, optimization.

B.Sc. Hon., Computer Science, *First Class Honours*, October 2010

- Optimization, neural networks, machine learning, computer architecture, databases, advanced algorithms, software engineering.

AWARDS

- Nominated, Jack M. Miller Excellence in Research Award, 2013.
- Dean of Graduate Studies Research Fellowship, 2010
- Dean of Math and Science Research Fellowship, 2011–2012
- Dean's Honour Roll, 2008–2010
- Graduate Fellowship, 2010
- In-Course Scholarship, 2008–2009

REFEREED PUBLICATIONS AND CONFERENCE PROCEEDINGS

A. Bailey, M. Ventressca, and B. Ombuki-Berman. Genetic Programming for the Automatic Inference of Graph Models for Complex Networks *IEEE Transactions On Evolutionary Computation*. vol. PP, no. 99, doi: 10.1109/TEVC.2013.2281452, 2013.

A. Bailey, B. Ombuki-Berman, and M. Ventressca. Automatic Inference of Hierarchical Graph Models using Genetic Programming with an Application to Cortical Networks. *The Genetic and Evolutionary Computation Conference, (GECCO)*. pp.893–900, Amsterdam, 2013.

A. Bailey, B. Ombuki-Berman, and Stephen Asobiela. Discrete PSO for the Uncapacitated Single Allocation Hub Location Problem *IEEE Symposium Series on Computational Intelligence, (SSCI)*. pp.92–98, Singapore, 2013.

A. Bailey, M. Ventressca, and B. Ombuki-Berman. Automatic Generation of Graph Models For Complex Networks By Genetic Programming. *The Genetic and Evolutionary Computation Conference, (GECCO)*. pp.711–718, Philadelphia, 2012.

Presented on Behalf of M. Naeem and B. Ombuki-Berman. An efficient genetic algorithm for the uncapacitated single allocation hub location problem. *IEEE Congress on Evolutionary Computation, (WCCI)*. pp.941–948, Barcelona, 2010.

PATENTS ISSUED

P. Gururajan, S. Parent, A. Bailey, D. Maki. “**Systems, devices, and methods for searching and booking ride-shared trips**,” United States, US10853743B2, Dec. 2, 2020.

T. F. Lidbetter, A. Bailey, C. Goes, P. Gururajan, R. Sivakumar. “**Dynamic scheduling of driver breaks in a ride-sharing service**,” United States, US11429910B1, Aug. 30, 2022.

PROFESSIONAL EXPERIENCE

RideCo, *Software Eng. Manager*

November 2021 to Present

- Scaling the RideCo route optimization platform to handle ridership for some of the largest microtransit projects in the world. Scaling teams. Helping to scale an organization. **Skills:** Leadership, planning, design and architecture.

RideCo, Software Engineer **November 2014 to November 2021**

- Developed a proprietary route optimization platform for microtransit, which serves thousands of daily riders in a highly available and dynamic environment. **Skills:** Python, R, C++, AWS.

Airon HVAC & Control, Software Developer **October 2013 to Nov. 2014**

- Designed and built a web platform to offer/improve client services, improve business process efficiency, and facilitate business analytics. **Skills:** C#, ASP.NET MVC, MS Azure, SQL, data manipulation and analysis, deploying/managing Cloud Services.

Industry Collaboration, Research Assistant **April 2013 to October 2013**

- Brock-Airon collaboration funded by Ontario Centres of Excellence: analysis of building energy use and development of a building automation system with fault detection. **Skills:** C#, Java, SQL, functional programming, data manipulation and analysis.

Industry Collaboration, R & D **September 2011 to March 2012**

- Brock-SMARTteacher collaboration funded by The Applied Research and Commercialization Initiative: development of an adaptive bio-feedback subsystem able to respond to the perceived emotional state of a user. **Skills:** C#, Silverlight, implementation and tuning of machine learning algorithms.

OTHER RESEARCH
EXPERIENCE

Masters Thesis **September 2011 to August 2012**

- Genetic Programming for the Automatic Generation of Graph Models for Complex Networks
 - Introduced and demonstrated the efficacy of, Genetic Programming for the automatic generation of graph models. Model construction is traditionally a painstaking manual undertaking. **Skills:** C++, make, SVN, R, BASH, Python, statistical analysis, managing large amounts of data.

Honours Thesis **September 2009 to April 2010**

- Discrete Particle Swarm Optimization
 - Proposed a new approach to discrete optimization via a modified particle swarm. The swarm was used to optimize transportation costs in a hub-spoke network by hub allocation, the best-known results were matched for all benchmark problems. **Skills:** Java, SQL.

Research Assistant **May 2009 to September 2009**

- Hyper and Meta Heuristics for Job Shop Scheduling
 - Development of a novel Genetic Algorithm for Job Shop Scheduling.
 - Literature review: applications of hyper-heuristics in Job Shop Scheduling.

TEACHING
ASSISTANTSHIPS

- COSC 4P76 *Machine Learning*, Brock University, 2012.
- COSC 1P50 *Integrity and Literacy in the Information Age*, Brock University, 2012.
- COSC 2P93 Marker: *Logic Programming*, Brock University, 2012.
- Computer Science Student Help Desk, Brock University, 2012.

OTHER
SCHOLARLY
ACTIVITIES

- Deep Learning Summer School 2017, hosted by MILA at Université de Montréal.
- Member, ACM Special Interest Group: Evolutionary Computation (2012–present).
- Member, Institute of Electronic and Electrical Engineers (2012–present).
- Member, Bio-Inspired Computational Intelligence Group (2012–2014).
- Substitute Lecturer, COSC 4P80: Single layer neural networks (January 16, 2013).

- Substitute Lecturer, COSC 4P76: Reinforcement learning (March 15, 2012).
- Session Chair, Brock U.: Graduate Program Thesis Proposal Workshop (2011).
- Senior Student Mentor, Brock University (2009–2010).
- President, Brock U. Computer Science Club / ACM Student Chapter (2009–2010).
- ACM Programming Competition (2008, 2009).

A SELECTION OF Python, AWS, system design & architecture, R, \LaTeX , Prolog, C++, C#, C, Java.
TECHNICAL SKILLS

REFERENCES Available upon request