

Spencer Bryson

Toronto, Canada

✉ spencer.bryson@ontariotechu.net | 🏠 www.spencerbryson.ca | 📷 [spencercbryson](https://www.instagram.com/spencercbryson) | 🌐 [spencercbryson](https://www.linkedin.com/company/spencercbryson)

Computer science graduate student with strong interests in data science, machine learning, databases, big data and data visualization. Researched and developed several projects individually or in teams over the past 6 years, including distributed systems and deep learning applications. Comfortable meeting tight deadlines and learning new technologies on the fly.

Education

Ontario Tech University

Oshawa, Ontario, Canada

M.Sc. IN COMPUTER SCIENCE, ADVISED BY ASSOCIATE PROFESSOR JAREK SZLICHTA, GPA: 4.0/4.3

2019 - 2021

Univeristy of Ontario Institute of Technology

Oshawa, Ontario, Canada

B.Sc. WITH HIGHEST DISTINCTION IN COMPUTER SCIENCE (HONOURS), DATA SCIENCE SPECIALIZATION, GPA: 4.03/4.3

2015 - 2019

Experience

IBM Centre for Advanced Studies

Markham, Ontario, Canada

STUDENT RESEARCH FELLOW

May 2019 - Dec. 2021

- Led the research and development of BLUTune, a system for automatic configuration parameter tuning for **IBM DB2** to maximize query workload performance using **Deep Reinforcement Learning**. Built using **Python** and **PyTorch**.
- Assisted in the development of a distributed implementation of another IBM CAS project "GALO" using **Apache Spark** and **Java**.

Ontario Tech University

Oshawa, Ontario, Canada

RESEARCH ASSISTANT, DATA SCIENCE LAB

May 2018 - Dec. 2021

- Researched and solved problems alongside lab supervisor Dr. Jarek Szlichta.
- Created a distributed implementation of Random Walk with Restart to rank nodes in a very large social network using **Apache Spark**, **Hadoop** and **Scala**.

TEACHING ASSISTANT

Sep. 2017 - Dec. 2021

- Led tutorials and labs for undergraduate level courses (Big Data Analytics, Database Systems & Concepts, Scientific Data Analysis, Software Design & Analysis, Data Structures).

Skills

Languages: Java, Python, C++, Scala

Web Design: HTML and Bootstrap, CSS, JavaScript, Node.js, d3.js

Databases: MySQL, PostgreSQL, IBM DB2, MongoDB

Other Technologies: Apache Spark, PyTorch, Unix shell, Git, Google Cloud, Docker, Hadoop

Honours & Awards

2021 Project of the Year, Runner-up, IBM Centre for Advanced Studies 2022

Nominee for Master's Thesis Award, Ontario Tech University 2021

IBM CAS Fellowship, IBM Centre for Advanced Studies 2019-2021

Undergraduate Student Research Award (2x), Natural Sciences and Engineering Research Council of Canada 2018-2019

President's List (6x), Dean's List (2x), Ontario Tech University 2015-2019

Technical Projects

Automatic Knobs-Tuning for DB2 using Deep Reinforcement Learning (M.Sc. Thesis)

Sept. 2019 - Dec. 2021

- Created a system, BLUTune, to solve the problem of automatic configuration parameter tuning for **IBM DB2** through **deep reinforcement learning** using **Python** and **PyTorch**.
- Devised a novel training technique, borrowing ideas from transfer learning, to effectively train a model using both query optimizer cost estimates and actual execution time in an acceptable amount of time. Demonstrated the ability to scale to large OLAP workloads upwards of 100GB.

DistGALO: Distributed system for query problem determination

May 2019 - Sept. 2019

- Used **Java** and **Apache Spark** to implement a distributed algorithm to partition and process query execution plans in parallel.

Robust and Efficient Team Formation in Expert Networks (B.Sc. Thesis)

May 2018 - May 2019

- Designed and created a system to recommend robust teams of experts with specific skills over the very large DBLP social network dataset.
- Created a distributed implementation of Random Walk with Restart using **Apache Spark**, **Hadoop** and **Scala** to produce recommendations.

MEANRedd

Apr. 2018

- Created a data visualization tool for discovering meaningful words and emergent topics in a corpus of Reddit submissions (as a team of three).
- The online tool uses data-mining, frequent itemset analysis and Natural Language Processing techniques and was built using **JavaScript**, **d3.js** and **Bootstrap**. Demo available: www.spencerbryson.ca/MEANRedd.html

Publications

Database Management Systems Tuning through AI

Canadian AI 2021

S. Bryson, C. Henderson, V. Corvinelli, P. Godfrey, P. Mierzejewski, J. Szlichta, C. Zuzarte. Database Management Systems Tuning through AI. Canadian AI, industry track, 1-4, 2021.

Robust keyword search in large attributed graphs

Information Retrieval Journal 2020

S. Bryson, H. Davoudi, L. Golab, M. Kargar, Y. Lytvyn, P. Mierzejewski, J. Szlichta, M. Zihayat: Robust keyword search in large attributed graphs. Information Retrieval Journal 23(5): 502-524 (2020).

GALO: Guided Automated Learning for re-Optimization

VLDB 2019

G. Damasio, S. Bryson, V. Corvinelli, P. Godfrey, P. Mierzejewski, J. Szlichta, C. Zuzarte: GALO: Guided Automated Learning for re-Optimization. Proc. VLDB Endow. 12(12): 1778-1781 (2019).

Presentations

34th Canadian Conference on Artificial Intelligence

Vancouver, B.C., Canada

PRESENTER FOR <DATABASE MANAGEMENT SYSTEMS TUNING THROUGH AI>

May 2021

- Presented BLUTune and discussed how AI can be used to tune database systems such as IBM DB2.

CASCON x EVOKE 2020

Markham, Ontario, Canada

PRESENTER FOR <CONTINUOUS KNOB-TUNING OVER DYNAMIC DATA ENVIRONMENTS>

Nov. 2020

- Introduced the problem of knobs-tuning for IBM DB2 and presented early research and a proposed solution.

CASCON x EVOKE 2019

Markham, Ontario, Canada

PRESENTER FOR <GALO: GUIDED AUTOMATED LEARNING FOR QUERY WORKLOAD RE-OPTIMIZATION>

Nov. 2019

- Poster presentation for GALO and the motivation, architecture and design behind it.

Extra-curricular Activity and Interests

Computer Science Society

Ontario Tech University

CO-FOUNDER AND PRESIDENT

Jan. 2017 - May 2019

- Co-founded and organized the Computer Science Society, a student-run club/society at Ontario Tech University.
- Organized various academic and skill-building events, such as MLH Local Hack Day, a one-day hackathon with workshops and presentations.
- Created and hosted a workshop "Introduction to Distributed Computing and Apache Spark".

Personal Interests

- Golfing, mountain biking, fishing, canoeing/kayaking, skiing, strategy games