

JACOB RITCHIE

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EDUCATION

University of Toronto

September 2017-January 2019 (expected)

Master of Science in Computer Science

GPA: 4.0/4.0

Supervisors: Daniel Wigdor and Fanny Chevalier

University of Toronto

September 2012-April 2017

Bachelor of Applied Science in Engineering Science

Major in Electrical and Computer Engineering, Minor in Robotics and Mechatronics

GPA: 3.94/4.0

Thesis Supervisor: Leon French

PUBLICATIONS

Journal Publication

- J1. **Jacob Ritchie**, Spiro Pantazatos, Leon French. 2018. Transcriptomic characterization of MRI contrast with focus on the T1-w/T2-w ratio in the cerebral cortex. *NeuroImage*. 174, 1: 504-517. DOI: <https://doi.org/10.1016/j.neuroimage.2018.03.027>

Posters and Presentations

- P3. Monica Granados, **Jacob Ritchie** and Constance O'Connor. 2018. Guide to Eating Ontario Fishes Mobile Application. In *Up North on Climate Conference 2018*. (Poster presented by first author.)
- P2. **Jacob Ritchie**, Spiro Pantazatos, Leon French. 2017. Magnetic Resonance Imaging from the Transcriptomic Perspective. In *7th International Workshop on Pattern Recognition in Neuroimaging (PRNI 2017)*.
- P1. **Jacob Ritchie**, Alex Mihailidis. 2013. Age-CAP: An Age-friendly Communities Assessment App. In *University of Toronto Undergraduate Engineering Research Day 2013*.

AWARDS AND HONORS

Ontario Graduate Scholarship, \$10,000 CAD

May 2018 - December 2018

Golden Monkey Award for Best Graphics Course Project, University of Toronto

December 2017

Wolfond Fellowship, University of Toronto, \$13,334 CAD

September 2017 - January 2019

Research Assistantship, University of Toronto, \$27,500 CAD

September 2017 - January 2019

NSERC CGS-M (Declined), \$17,500 CAD

September 2017 - August 2019

Engineering Science Award of Excellence, University of Toronto

January 2017

Scholarship of Excellence in Research, EPFL, 5300 CHF

May 2016 - August 2016

NSERC Industrial Undergraduate Research Award, \$4500 CAD

May 2014 - August 2014

Engineering Science Research Opportunity Fellowship, \$3000 CAD

May 2013 - August 2013

Dean's Honour List, University of Toronto

September 2012 - April 2017

President's Entrance Scholarship, University of Toronto, \$2000 CAD

September 2012

PROFESSIONAL EXPERIENCE

Volunteer Software Developer **Open the North**

July 2017-April 2018

- Sole developer on a project using open government data to communicate safe levels of fish consumption for Indigenous communities in Northern Ontario.
- Created a proof-of-concept application (**P3**) that secured funding from the Wildlife Conservation Society to hire a full developer team to complete the project.

Research Assistant **Computational Neurobiology Lab, Centre for Addiction and Mental Health, Toronto, Canada**

May 2017-August 2017

- Performed the first genome-wide transcriptomic characterization of T1-w/T2-w MRI contrast (**P2, J1**). Learned computational and statistical techniques for data-driven neuroscience.
- Used transfer learning to leverage OpenAI's state-of-the-art mLSTM sentiment model to detect suicidal intent from forum posts. Employed meta-learning using TPOT to perform automatic model selection.

Summer Research Intern **Applied Computing and Mechanics Lab, EPFL, Lausanne, Switzerland**

May 2016-August 2016

- Worked with a Ph.D. student mentor to test a full-scale actuated tensegrity bridge structure.
- Applied machine learning to improve accuracy of nonlinear structural modeling. Used clustering techniques to identify structural damage based upon dynamic response to excitation.
- Wrote MATLAB code employing pathfinding algorithms to control structural actuation. Validated algorithm performance using the tensegrity structure.

Software Engineer (Professional Experience Year) **Intel Corporation Programmable Solutions Group (formerly Altera), San Jose, USA**

May 2015-April 2016

- Developed software tools for modeling signal routing in experimental 14nm FPGA semiconductor devices.
- Created a HTML5 application for visualization of signal routing connectivity on an integrated circuit 1 million logic elements in size, allowing for better analysis of complex connectivity problems.

Research Intern **Rocscience Inc., Toronto, Canada**

May 2014-August 2014

- Developed knowledge of finite element analysis, computational rock mechanics and fluid mechanics and applied this to development of software for scientific computing and computer-aided mining engineering design.

Summer Student **Intelligent Assistive Technology and Systems Lab, University of Toronto, Toronto, Canada**

May 2013-August 2013

- Carried out a pilot study for a noninvasive medical sensor device and performed data analysis in MATLAB.
- Created a cross-platform HTML5 mobile application targeted at senior citizens, using universal design and usability criteria, for crowdsourced collection of accessibility data (**P1**).

TEACHING EXPERIENCE

Teaching Assistant, University of Toronto

- **CSC108, Introduction to Computer Programming (~1000 students)** Fall 2017
- **CSC318, Design of Interactive Computational Media (~100 students)** Spring 2018, Fall 2018

ACADEMIC SERVICE

External Reviewer, InfoVis 2018	2018
Student Volunteer, CHI 2018	2018
External Reviewer, Graphics Interface 2018	2018
Representative, University of Toronto Graduate Students Union	2018
Organizer, University of Toronto HCI Reading Group	2017-2018
Case Competition Director, U. of T. Sustainable Engineers Association	2013-2014