

## William Callaghan

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|-----------------------------|--|--------------------------|
| <b>OVERVIEW</b>             | My research focuses on how input from humans and machine learning algorithms influence the reliability and accuracy of time-series data analysis, particularly in the medical domain.  |                          |
| <b>EDUCATION</b>            | <b>M.Math Candidate</b>  | 2015 - Present           |
|                             | University of Waterloo, Waterloo, Ontario, Canada<br>Computer Science<br>Advisor: Edith Law  |                          |
|                             | <b>Honors Bachelor of Science</b>  | 2015                     |
|                             | University of Western Ontario, London, Ontario, Canada<br>Honors Specialization in Computer Science<br>Major in Microbiology and Immunology<br>Thesis Supervisor: Mark Daley   |                          |
| <b>AWARDS &amp; HONOURS</b> | <b>Math Domestic Graduate Student Award</b> — UWaterloo  | 2015-2017                |
|                             | <b>Math Graduate Experience Award</b> — UWaterloo  | 2015                     |
|                             | <b>Western Scholarship of Distinction</b> — Western  | 2010                     |
|                             | <b>Raytheon Canada Scholarship</b> — Raytheon Canada   | 2010                     |
| <b>WORKSHOP PAPERS</b>      | <b>Resolvable vs. Irresolvable Ambiguity: A New Hybrid Framework for Dealing with Uncertain Ground Truth.</b> Schaekermann, M., Law, E., Williams, A. C., & Callaghan, W. Workshop on Human-Centered Machine Learning at <b>CHI'16</b> . San Jose, CA. |                          |
|                             | <b>The Big Picture: Preserving Context in the Decomposition of Complex Expert Tasks.</b> Williams, A. C., Bradshaw, J., Schaekermann, M., Tse, T., Callaghan, W., & Law, E. Workshop on Microproductivity at <b>CHI'16</b> . San Jose, CA.             |                          |
| <b>INVITED TALKS</b>        | <b>Fighting Cybercrime: A Joint Task Force of Real Time Data and Human Analytics.</b> Callaghan, W. <b>Databricks Spark Summit East Conference 2017</b> . Boston, MA.  |                          |
| <b>WORK EXPERIENCE</b>      | <b>Software Developer Intern, Data Analytics</b>   | May 2016 - December 2016 |
|                             | Project: Engine for Performing Complex Queries on Large Datasets with Mission Critical Response Times<br>eSentire Inc., Cambridge, Ontario, Canada   |                          |
|                             | <b>Graduate Research Assistant</b>   | 2015 - Present           |
|                             | University of Waterloo, Waterloo, Ontario, Canada  |                          |
|                             | <b>Teaching Assistant</b>  | 2015 - Present           |
|                             | University of Waterloo, Waterloo, Ontario, Canada  |                          |

**Software Developer (Contract)** May 2015 - September 2015  
Product: Deep Packet Inspection Tools  
Product: Platform for Targeted Retrospective Analysis of Network Traffic  
eSentire Inc., Cambridge, Ontario, Canada

**QA Developer Intern** May 2014 - August 2014  
Product: Web Automation Framework  
Pelmorex Media Inc., The Weather Network, Oakville, Ontario, Canada

**Technology Manager** May 2013 - August 2013  
Engineering Outreach, University of Waterloo, Waterloo, Ontario, Canada

**SELECTED  
PROJECTS**

**HeartBeat**  
Framework to combine machine and human intelligence for the scalable and accurate analysis of human clinical echocardiograms and phonocardiograms. This is an active research project in the Human-Computer Interaction CrowdLab at the University of Waterloo, led by professor Edith Law.

**Modelling Influence in Social Networks**  
Researched and proposed a new model for learning the most influential agent in a social network. This was done as a final project for 'Advanced Topics in Artificial Intelligence: Trust and Online Social Networks' course at the University of Waterloo.

**Using Kalman Filtering and Lasso Regularization to Generate Brain Networks**  
Researched and proposed a new method of constructing functional brain networks as diagnostic markers for neurological disease from fMRI data. This was the topic of my Bachelor's thesis at the University of Western Ontario.

**TECHNICAL  
SKILLS**

**Programming Languages:** Java, Scala, Python, C  
**Knowledge/Experience:** Apache Spark, Relational & NoSQL Databases (Cassandra), Apache Kafka, RESTful API Development, Git, SBT, Jenkins, Docker