

# Chris Foster

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## Professional Experience

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### Software Developer

*September 2016 - Present | Remote*

Two Story Robot Labs Inc.

Full stack developer for multiple in-house SaaS products, and consulting for both government and private organizations. While I primarily focus on engineering and architecture, the consulting positions often require support, research, data science, and mentoring roles. I develop with modern technologies including Javascript, Node, AWS, C++, Elasticsearch, RethinkDB, AngularJS, RabbitMQ, CouchDB, Docker, React, Apollo, GraphQL, and Redux.

### Software Developer

*September 2012 - September 2016 | Kamloops, B.C.*

MemoryLeaf Media Inc.

Full stack web application developer for multiple company SaaS products, as well as external contracting work for government and private organizations. Primarily worked with Javascript. Developed with technologies such as Node, Backbone, Marionette, jQuery, Elasticsearch, MongoDB, AngularJS, CouchDB, RethinkDB, Docker, and React.

### Freelance Web Developer

*April 2011 - November 2012 | Kamloops, B.C.*

Independent Professional

Freelance web developer for a number of local businesses, organizations, and government entities. Many smaller projects focusing on simple web design for commercial businesses or community outreach, with a few larger projects consisting of full stack web applications made to handle large amounts of data and users. Websites were designed in raw HTML/CSS and web applications were built with MySQL, PHP, jQuery, and Backbone.

## Education

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### Master of Science

Major in Computing Science

Research in Machine Learning and Computational Neuroscience

*September 2016 - August 2018 (expected)*

University of Victoria, Victoria, British Columbia

## **Bachelor of Computing Science**

Specialization in Software Engineering

Awarded the TRU Medal of Computing Science for highest graduating GPA

*September 2012 - June 2016*

Thompson Rivers University, Kamloops, British Columbia

## **Conferences and Publications**

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### **Decoding Music in the Human Brain using EEG Data**

Chris Foster, Dhanush Dharmaretnam, Haoyan Xu, Alona Fyshe, George Tzanetakis

IEEE 20th International Workshop on Multimedia Signal Processing

August 2018 - Vancouver, Canada

This research project utilizes representational similarity analysis to measure the relationship between music features and the EEG data of subjects listening to the music. We show correlation between the mel spectrogram cepstral coefficients and tempogram features of the songs with the brain data of the subjects. We also use a simplified machine learning approach to achieve state-of-the-art classification of song titles from the EEG data on this dataset.

### **Decoding Word Semantics and Learning in EEG Data via an Artificial Language**

Chris Foster, Chad C. Williams, Olave E. Krigolson, Alona Fyshe

Inaugural Conference on Cognitive Computational Neuroscience

September 2017 - New York, USA

This research project utilizes machine learning ridge regressors to predict word vector features based on input EEG data of a subject reading a word. The experiment is designed as a reinforcement learning paradigm, where the subject is viewing a series of symbols with a 1-to-1 mapping to an English word. As the subject learns the mappings we see word semantics begin to correlate to the brain's EEG readings as detected by a standard "2 vs. 2" test.

### **Response Time Predictions for Stack Overflow**

Guojin Tang, Erwin Li, Chris Foster, Haytham El Miligi

12th Annual TRU Undergraduate Research and Innovation Conference

March 2017 - Kamloops, Canada

This research project surrounds the investigation of applications for machine learning algorithms on large web datasets. We explore the application of machine learning in the context of developer mailing list data and more modern communities such as StackOverflow and Github. We improve on the work of a paper which predicts response times to Stack Overflow questions and explore ideas for improving the accuracy and applying to alternative datasets.

## **Tracking Cattle with Infrared Imaging Drones**

Chris Foster, Matthew McInnes, John Church, Kevin O'Neil

10th Annual Irving K. Barber School Undergraduate Research Conference

April 2015 - Kelowna, Canada

This research project surrounds the development and investigation of a prototype quadcopter automated drone that can fly over ranching fields and identify cattle with a high-quality infrared camera and our custom computer vision algorithm. By utilizing the onboard GPS, we can generate a list of coordinates for the rancher. This is magnitudes cheaper for ranchers than the traditional method.

## **Scholarships and Awards**

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### **President's Research Scholarship**

*September 2016 - \$4,000*

University of Victoria

### **University of Victoria Fellowship**

*September 2016 - \$13,500 (Declined)*

University of Victoria

### **Outstanding Graduate Entrance Award**

*September 2016 - \$5,000*

University of Victoria

### **Canada Graduate Scholarship Master's Award**

*September 2016 - \$17,500*

Natural Sciences and Engineering Research Council of Canada

### **TRU Alumni Association Award**

*November 2015 - \$1,200*

Thompson Rivers University

### **British Columbia District Award**

*November 2012 - \$500*

Government of British Columbia

### **BC Interior Community Foundation Award**

*October 2012 - \$300*

BC Interior Community Foundation

### **British Columbia Provincial Award**

*September 2012 - \$1,000*

Government of British Columbia

## Relevant Volunteer Experience

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### **Ministry of Education CodeBC Program**

*September 2017 - Present*

CodeBC Program Mentor

### **TRUCS Support Lab**

*September 2015 - December 2015*

Support Lab Volunteer

### **TRUSU Computer Science Club**

*November 2014 - June 2016*

Board Member - President

### **TRUSU Computer Science Club**

*March 2014 - November 2014*

Board Member - Vice President

### **TRUSU Computer Science Club**

*November 2013 - March 2014*

Board Member - Events Coordinator

### **Startup Weekend Kamloops**

*June 2013 - July 2015*

Assistant Organizer

## Community Talks and Presentations

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### **Decoding Semantics During an Artificial Language Learning Task Using EEG**

Presented to the University of Victoria Cognition and Brain Sciences Program

*September 2017*

### **The Fundamentals of Neural Networks**

Presented to Victoria Machine Learning Meetup

*May 2017*

### **Deep Learning for Self Driving Cars**

Presented to Advanced Software Engineering Research Seminar

*April 2017*

## **Video Super Resolution with Deep Learning**

Presented to Computing Science department

*April 2017*

## **SwoopVR: A Web-based Mesh Viewer**

Presented to Thompson Rivers University faculty

*April 2016*

## **Mining Stack Overflow**

Presented to Thompson Rivers University faculty

*April 2016*

## **Introduction to Functional Programming**

Presented to Computer Science Club members

*February 2016*

## **Introduction to Automated Testing**

Presented to Computer Science Club members

*November 2015*

## **Tracking Cattle with Infrared Imaging**

Presented to Thompson Rivers University faculty

*May 2015*

## **Introduction to Python**

Presented to Computer Science Club members

*April 2015*

## **Creating Zero-Knowledge SaaS Applications**

Presented to the Okanagan Developers Group

*October 2014*

## **Introduction to Git**

Presented to Computer Science Club members

*October 2014*

## **Introduction to Cryptography**

Presented to Computer Science Club members

*September 2014*

## Certifications and Courses

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### **AWS Certified Solutions Architect Associate**

*September 2017*

Amazon Web Services

### **Standard First Aid & CPR**

*January 2015*

Canadian Red Cross

### **MongoDB Developer Course Certification**

*December 2012*

MongoDB Inc.

### **Machine Learning Course Certification**

*December 2011*

Coursera

## Research Interests

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- Artificial intelligence, machine learning
- Privacy, applied cryptography, secure communications, and zero-knowledge services
- Software development, open source software, web technologies
- Security in mobile applications, web applications, and networks
- Practical applications of new types of software for fields other than computing science

## Personal Achievements

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- Placed 1st in the M:18-24 category for Oliver Half Iron 2018 Triathlon
- Placed 10th in the M:18-24 category for Ironman Santa Rosa 2017 Qualifier Triathlon
- Placed 1st in the M:20-24 category for Oliver Half Iron 2016 Triathlon
- Placed 2nd in the M:20-29 category for Kamloops Sprint Sprint 2016 Triathlon
- Placed 3rd in the M:20-29 category for Pavillion Sprint 2015 Triathlon

- Placed 1st in the M:20-29 category for Kamloops Sprint Sprint 2015 Triathlon
- Placed 3rd in the M:20-29 category for Pavillion Sprint 2014 Triathlon
- Placed 1st in the M:16-19 category for Pavillion Sprint 2013 Triathlon

## Languages

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### **English**

Native Speaker

### **Esperanto**

Limited Working Proficiency