

# Tristan Hume

Student Developer - University of Waterloo Computer Science

## Work

**Cruise (1 month in out of 4)** Computer Vision Intern, Winter 2018

- Created a model, data pipeline and training and evaluation framework in Tensorflow for detecting the artifacts of rain on camera lenses.

**Google** Software Engineering Intern, Summer 2017

- Worked on an [open-source, heavily documented Conflict-free Replicated Data Type](#) for text, refining it for fast and seamless editing and merging.
- Implemented multi-device text synchronization for the [Fuchsia operating system](#) including reliable merging of changes after editing offline across devices.

**Jane Street Capital** Developer Intern, Fall 2016

- Wrote a [js\\_of\\_ocaml](#)-based debugging and exploration tool that reinterprets a rule matching language to find all possible paths given a set of constraints on the input.
- Implemented parsing and processing code for a low latency binary UDP market data feed with zero-allocation OCaml. Learned a lot about finance in the process.
- Developed a [custom tree diffing algorithm](#) based on minimizing a cost model using dynamic programming accelerated with an A\* search for large trees.

**UWaterloo HCI Lab** Undergraduate Researcher, Winter 2016

- Designed and developed a hands-free mouse alternative that combines the speed of an eye tracker and the accuracy of head tracking using [MAGIC](#).
- Developed high accuracy low-latency audio recognition algorithms for using various mouth noises (e.g lip popping) to perform actions like clicking.
- Combined knowledge from hundreds of HCI and eye tracking papers to develop an enjoyable to use system with speed and accuracy similar to a trackpad.

**Shopify (Shipping Team)** Developer Intern, Summer 2015

Helped develop [Shopify Shipping](#). I fixed production disruptions, implemented package tracking and owned the development of the [unified fulfillment and label purchase form](#) now used by thousands of merchants every day.

## Developer Internships During High School

1 month at Shopify in 2014, 2 months at Shopify in 2013, 2 months at The Eclipse Foundation in 2012, 3 weeks at Halogen in 2012.

## Selected Projects

### Dayder

A Rust web app for finding spurious correlations in 390,000 time series data sets. I wrote custom optimized DOM, JS Canvas rendering, caching, correlation and [binary serialization](#) code for instantly responding to queries.

### The Open Turing Compiler

An LLVM based compiler for [Turing](#) as well as a Qt-based IDE and a simple drawing library.

### PolyType

I built a working keyboard I designed in AutoCAD and put together with laser cut acrylic layers, Cherry MX switches, lots of soldering, and an ARM microcontroller.

### SmartGaze

I reverse engineered my [Eye Tribe](#) tracker's USB protocol by scripting LLDB to capture their USB messages and implemented a glint and iris tracker on the raw image feed suitable for high accuracy eye tracking.

### StashLine

An iOS app for long term personal finance simulation with 7000 users. Has a custom built UI that instantly updates a visualization of your entire life's financial future while you manipulate inputs.

### Syntect

A high quality syntax highlighting library in Rust based on Sublime Text 3's grammar and theme formats. Relentlessly optimized for performance and highlighting quality. Well-documented, tested and fully-featured.

 [thume.ca](http://thume.ca)

 [github.com/trishume](https://github.com/trishume)

 [tristan@thume.ca](mailto:tristan@thume.ca)

## About

I'm an enthusiastic developer who has spent the last 10 years building dozens of projects using a large variety of languages and technologies. I'm also building a solid academic groundwork through my studies as a CS student, research work, and spending lots of my spare time reading. I'm a 3rd year student with a GPA of 88% and 94% in-major.

## Open Source

I've created dozens of open source projects with over 20,000 combined users (300,000 if you count web apps), all of which you can find on [my Github page](#).

I was also the [first contributor](#) and long time top contributor to [Spacemacs](#), a now quite popular configuration package for Emacs.

I once went on a 201 day long Github streak.

## Languages Used

My strongest languages are Ruby, Rust and C++. I've written over 10,000 lines of code in each of these languages.

I also enjoy learning new languages: I've done projects in 22 different languages including Javascript, Haskell, D, Go, and OCaml.

