

Tristan Hume

Software Developer - BCS from the University of Waterloo

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Work

Cruise

2018/01/02 - 2018/04/20
Computer Vision Intern, Winter 2018

- Built an internal model training system around Tensorflow including fast reproducible data loading, training, testing and exporting.
- Designed, tuned, tested and integrated a machine learning model for detecting flares from rain on camera lenses.

Google

2017/05/01 - 2017/08/04
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

2016/09/12 - 2016/12/16
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

2016/01/04 - 2016/04/19
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.

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

Yūbinkyoku

A path tracing renderer capable of rendering photorealistic images. Supports a physically based BRDF, texture/normal mapping, area lights, glossy reflection, anti-aliasing, DOF, CSG, fractals, portals and much more.

Syntect

A fast high quality syntax highlighting library in Rust based on Sublime Text 3's grammars. Well documented and tested, with active contributors. Powers two commercial products parsing terabytes of code per day.

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 created with AutoCAD, laser cut acrylic, [custom firmware](#), and soldered electronics.

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.

About

I'm a programming enthusiast who's spent years working on a broad variety of projects both for fun and for many different companies, as well as reading online for hours a day. My specialties include compilers, graphics, computer vision and high-performance systems.

Open Source

I've created dozens of open source projects used by hundreds of thousands of people and libraries incorporated into products by multiple companies, 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.

Bachelor's in CS

I graduated from the [University of Waterloo](#) in 2019 with a cumulative average of 89.4%.

Languages Used

I've written over 10k lines in each of Rust, C++ and Ruby. I also know Python, Javascript, OCaml, Java, Go, and more.

