

**Morgan Thomas**

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## Software Engineer with Leading-Edge Applied Math

Versatile problem-solver employing best practices in analysis, engineering, algorithms, and code.

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**Objective** I wish to make a positive impact on others' lives.

**Core Competencies** Delivering correct software based on solid engineering  
Clear technical communication tuned to audience and context  
Sound and innovative mathematical analysis of real-world problems

**Selected Skills**

**Programming languages**  
Haskell JavaScript C# dabbled in many

**Software engineering**  
Agile Testing/TDD Git Web frontends and APIs Linux Windows  
Concurrency (locks, STM, streams, ...) Functional programming OOP

**Computer science**  
Data structures Complexity analysis (big- $O$ , etc.) Theory of languages

**JavaScript technologies**  
Node.js Vue React Angular ES6+ Webpack

**Applied math**  
Logic Statistics and probability Graph theory  
Calculus Linear algebra Numerical optimization

**Communication**  
Documentation/technical writing Teaching Self-teaching Good listener

**Professional Experience**

**Developer, Co-Founder. Kassir.io. Jun 2018 – present.**  
Using Haskell to develop an algorithmic cryptocurrency trading system. Focus on math algorithm design, dev, and automated testing.

**Contractor. Spectrum. Sep 2018 – Aug 2019.**  
M&E for legacy JavaScript frontend for flagship set top box product, including bugfixes, refactoring, build system overhaul, and memory management overhaul.

**Developer & Algorithms Specialist. InnoTrade.io. Mar 2018 – Jun 2018.**  
Used Haskell and Rust to develop an algorithmic cryptocurrency trading system. Built a working MVP in a short time, focusing on math algorithm design and dev with rapidly changing requirements set by non-technical leadership.

**Developer. IHS Markit. Oct. 2015 – May 2018.**  
Created and maintained Web based financial research tools for some of world's largest investment management companies, using ASP.NET and JavaScript (jQuery, React, Vue, Node). Contributed to established projects, and led architecture and dev of a state of the art ETF research UI with browser automation testing.

**JavaScript Instructor. Saisoft, Inc. (contractor for).  
Nov. 2015 – Dec. 2015.**  
Trained IT professionals in JavaScript using self-developed courseware.

- Selected Projects**
- FreeCat** <https://github.com/morganthomas/freecat>  
A programming language descending from Haskell and Idris, founded on new ideas in type theory. Developing in Haskell.
- Fairy Chess** <https://github.com/morganthomas/fairy-chess>  
A networked game of chess where the rules are different every time. Built using Angular, MongoDB, Node.  
Demo: <https://www.youtube.com/watch?v=fBIJpnxy0fs>
- 2048** <https://github.com/morganthomas/2048-js>  
Plays a puzzle game called 2048 with itself; plays much better than most human players, including me. Demo: <http://206.189.66.150:3001/>
- purescript-group** <https://github.com/morganthomas/purescript-group>  
The PureScript library implementing the concept of groups from abstract algebra.
- Education**
- University of Connecticut. Philosophy, MA. 2013 – 2015.**  
Mathematical research resulted in three publications in top logic journals.  
Cumulative GPA 4.1. Graduated Spring 2018 (due to delay filing papers).
- Arizona State University. Psychology, BS. 2009 – 2013.**  
Minors, Mathematics and Philosophy. Thesis on philosophy of computation.  
Developed EEG headset interface software in C++ as part of a Psychology Department research project. Cumulative GPA 3.83.
- Academic Honors** Top scorer, Putnam Mathematical Competition at Arizona State University. 2013.  
National Merit Scholar. 2009.