Alexander L. Carter

Generalist Software Developer

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I'm passionate about software correctness, clarity, and expressing specifications as types. I'd like to apply my knowledge of practical functional programming to build impactful and reliable solutions to difficult problems.

LANGUAGES

FLUENT: C++ (10 years), GNU Bash (10 years), Idris (5 years), Haskell (4 years), C (3 years), Java (3 years), Scheme (2 years)

VERY FAMILIAR WITH: Nix, JavaScript, HTML, CSS, Ruby, Lua, PureScript, GLSL, Objective-C, PHP, Puppet, C#

ROLES

Private Tutor   APRIL 2020 - PRESENT

My tutoring strategy is goal-oriented and starts by meeting any student at their current level of understanding. Through discussion and exercises, I've had hundreds of hours of successful lessons supporting students with:

- getting started with programming through games at the middle-school level
- introductory through advanced C, C++, and Java language topics
- functional programming with Haskell and Scheme
- masters-level functional programming languages and compilers

DevOps @ SigFig   JULY 2014 - SEPTEMBER 2018

I was the #2 individual contributor for the infrastructure team during my tenure at SigFig, and trusted with full operational control over all production and data systems for a million monthly active users and thousands of clients with assets under management.

- Lead developer and operator of production change management systems (Ruby, Bash, Puppet)
- Lead developer and operator of continuous integration systems (Jenkins, Ruby, Bash, Git)
- On-premises and hosted virtualization (VMware vSphere, AWS EC2)
- System and service configuration management (Puppet)
- Logging and monitoring (Logstash, Nagios, Kibana)
- Database administration (MySQL)
- Containerization of JVM services and build pipelines (Docker)
- Key contact for all technical SOC auditing requirements

Adjunct Lecturer @ DigiPen

As an adjunct, I managed all aspects of several semesters of the core computer science curriculum for freshmen and sophomores, and led summer elective courses in functional programming with curriculum of my own design.

- CS 120: High-Level Programming 1 (C)
- CS 170: High-Level Programming 2 (Introduction to C++)
- CS 185: Introduction to C++ for Game Designers
- CS 225: Advanced C/C++
- CS 399: Introduction to Functional Programming (Idris/Haskell)

Technical Co-Founder @ Protean Solutions

October 2018 - Present

An unfunded venture, our team focuses on a crowdsourced information-sharing quality-of-life mobile app for truck drivers, and have delivered on minor engagements with a freight carrier for custom fleet analytics support software construction. As the only professional developer on the team, 95% of Protean's engineering is my work.

- Android native client with Google Maps and Google Sign-In integrations
- Web frontend (HTML, CSS, JavaScript)
- Web backend (Apache CGI, GNU Bash, JSON, MySQL)

Prototype Development @ ITG Holdings

February 2014

A solo contract for technical design and implementation of a prototype web client and server featuring real-time updates among many clients simultaneously. Multiple other teams had been engaged and failed to deliver on this concept previously.

- Haskell & the Yesod Web Framework
- JavaScript & jQuery AJAX
- 4 week engagement concluded with a functional prototype delivered in 3 weeks leaving a full week for user testing

Mobile Game Development @ TinyCo

August 2011 - October 2013

- Designed, implemented, and led ongoing engineering for an overhaul of the team's core 2D animation system, including client code, asset pipeline, viewer, and performance profiler, dramatically decreasing animation storage and runtime memory requirements (90-95%) without disrupting animators' production workflow
- Led a team of 5 engineers on Android and iOS development of *Super Slots*
- Contributed to Android and iOS projects *Tiny Monsters*, *Tiny Pets*, an unreleased strategy game, and TinyCo's internal shared libraries (C++)

Graphics Hardware Debug @ Intel

August 2010 - July 2011

- Debugged suspected graphics hardware issues on project SandyBridge
- After many sporadic failure reproductions over the course of 9 months, I managed to prove a voltage leak on 1% of SandyBridge parts that single-handedly created the E stepping.

EDUCATION

Digipen Institute of Technology

2006 - 2010

Bachelor of Science, Real-Time Interactive Simulation, Mathematics Minor