



## Full stack developer with an interest in every form of computation and our interactions with it



### Javascript

I've worked with several javascript frameworks both at home and at work as it's good for prototyping



### Hardware

Software can only take you so far, which is why I've always had a passion for hardware, the bridge between physics and logic



### Design

I believe that the true problems to solve in software are the underlying assumptions in what we want it to do for us, and what its users expect

## Work Experience

When we interviewed Denis in his 3rd year of university for a coop term, **right there I realized we wanted him on the team**. He was way ahead of his peers in programming knowledge. His dedication to side projects and hackatons were indicative of someone with passion for programming.

Souhail Alavi

Digital Fractal Technologies

Working with Denis on our software development team was a pleasure. His intelligence and out of the box thinking were an asset during design sessions as well as for day to day operational tasks

Jaqueline Cornish

Altus Geomatics

### IAC Publishing

(1 year) Jan 2017 - Dec 2017

Maintained and applied fixes to sites such as Ask.com, Reference.com, and ConsumerSearch.com

Created websites and website components from design mock ups

Set up and launched limited deploys for A/B testing, as well as other marketing analytics

Worked on tooling for CI, Unit Testing, Integration Testing, and process automation

### Athabasca University

(4 months) Apr 2013 - Jul 2013

Created a 3D educational physics simulator with Kinect 1.0 and XNA

Designed multiple hand tracking libraries using depth/color imagery

### Digital Fractal Technologies

(3.5 years) Aug 2013 - Dec 2016

Created iPhone / Android apps (both native and using Cordova/Ionic) for clients, often implementing niche features such as custom search / filtering, offline maps, accesibility, and general business logic

Created N-Tier Advertising management system for mobile LED displays with:

- A custom hardware picture/video display, capable of handling hundreds of simultaneous ads with arbitrarily complex geofences, GPS tracking, 3G connectivity, and regular 5 minute updates to server
- A web portal with ad file management and google maps polygon geofencing
- A dashboard with device tracking, server monitoring and GPS testing tools
- A secure back-end for handling mobile displays
- Online billing with invoices, Stripe payments, and account management

Helped coworkers with coding problems or process automation

Designed many graphical layouts over and above what a normal app UI looks like (intentful error messages, proper scrolling, custom data entry fields, etc)

Often helped clients find **what they really wanted in an app** that they could not immediately put into words, and often simplified complex designs into what an uninitiated user could understand

## Altus Geomatics Ltd

(8 months) Jan 2012 - Aug 2012

Reviewed and debugged a large-scale GIS site-scraping program

Researched into NodeJS and SOAP Services to improve web-scraping

Worked on a team of 3 attending daily scrums and following agile methodologies

Documented code changes and never left coworkers "out of the loop"

## Endako Mines

(4 months) Apr 2011 - Jul 2011

Developed a vanilla PHP website to replace old website / job board

Setup a touchscreen with VB.NET for employees to log vehicle maintenance

Looked into XCode tooling for possible intra-office app



## B.Sc. in Computer Engineering Co-op University of Alberta

First year in French and Bilingual Highschool Diploma

### Full Stack Overview

#### Algorithms

Grid-based geofence compression  
Custom finger tracking library  
DSP audio / video with MATLAB

#### Web

Custom UIs using CSS/JS from scratch  
Offline caching, and mobile features  
One Page Apps with Angular, Vue.js, etc

#### Web Servers

Unit tested database transactions  
Integrations with Stripe, MailChimp, etc  
Site health statistics / response time

#### Hardware

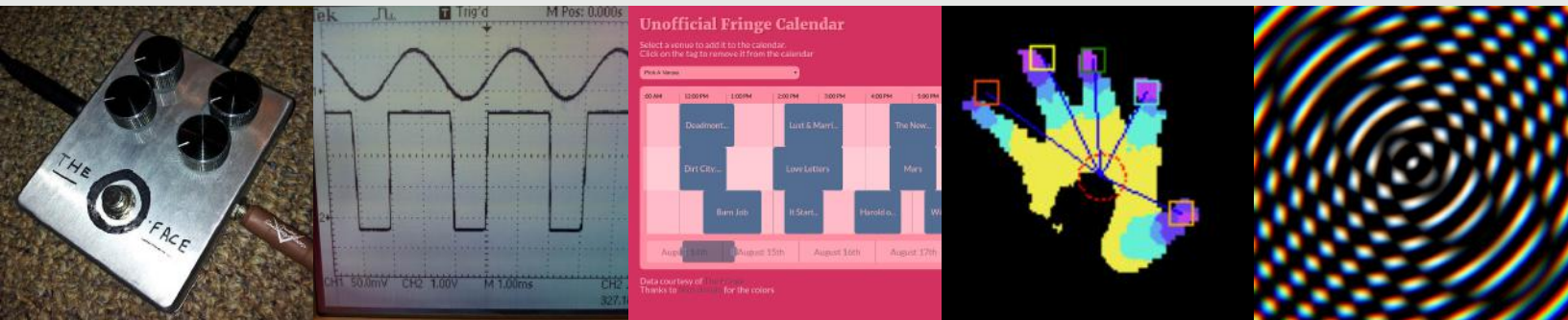
TTL debugging with oscilloscope  
Audio synths / amplifiers  
PCB design / soldering

#### Firmware

JACK audio clients  
FPGA / VHDL experience  
uC / x86 programming

#### Back End

Unit tested socket servers  
Queued jobs / front end status updates  
Media conversion / file upload



### Projects

#### Arduino Guitar Pedal

My first independent project, based on a tutorial from Instructables.com, was a guitar effects pedal using Digital Signal Processing concepts to create simple audio effects

#### CUDA Python Demo

This demo was created for an engineering fair in a couple days by combining several other projects I had worked on such as image generation using PIL, CUDA Acceleration, and an Arduino MIDI controller

# Appendix A: Detailed Work Experience

## Present

I'm currently unemployed after taking a year off to work on more hands-on hobbies such as woodworking and soldering, and I am now working on personal programming projects whilst looking for a job

## IAC Publishing

(1 year) Jan 2017 - Dec 2017

I was hired as a contractor with a 1 year contract as a semi-remote employee for IAC Publishing out of the Edmonton office. I worked with a team of 3 in Edmonton as well as reported back to the main team of 6 in Oakland, California where we planned sprints and had daily scrums over video chat. I helped with all aspects of website deployment including tracking bugs, implementing features such as server-side behavior or user tracking, custom front-end UIs, integrating multiple datasets into website categories, limited deploys, integration testing, unit testing, and website production releases. Some of the websites I worked with were ConsumerSearch.com, Reference.com, About.com, and Ask.com

I also worked on new projects such as converting a Drupal site to using a proprietary company webserver framework based on Express.js, improving the Gitlab CI build process and unit tests, and creating mock up user interfaces or websites. I worked on a relatively small team but occasionally communicated with various people from other departments to finish outstanding tickets such as marketing needs, or submitting bug reports to creators of various packages.

**Technologies Used:** Javascript, Express.js, LESS, NodeJS, Docker, OpenShift, Kibana, Grafana, Elasticsearch, AWS, AWS Lambda, Vagrant, JSON, Gitlab, Gitlab CI

## Digital Fractal Technologies

(3.5 years) Aug 2013 - Dec 2016

I was initially hired as a co-op student, but was offered a raise and continued employment after the end of my co-op term. I worked at Digital Fractal whilst completing my degree as well as some years after. I very much enjoyed the main project I was hired for which was an automated digital billboard system mounted on taxis (more info at [www.enrouteviewmedia.com](http://www.enrouteviewmedia.com)). I was heavily involved in all parts of the project, including hardware design, or more specifically hardware disassembly as we had to interface from standard linux hardware (Raspberry Pi) to an embedded platform through a proprietary ethernet protocol.

I also worked on a variety of mobile and desktop applications for clients mostly in the oilfield. Many of these apps were either a CMS (content management system) or were managed behind the scenes with a CMS. I used more third party integrations than I can count including Stripe, Mailgun, Mailchimp, Google Maps, Leaflet, D3, Dreamfactory. I also wrote a lot of custom functionality when a plugin or third-party tool didn't have the features we wanted, such as a Javascript Canvas handwritten signature input for a mobile app ([GetCaughtUp on the Android app store](#)), and a monthly billing system and invoicing system as well as a polygon geofence input for the taxi display project

Lots of these apps had challenging features such as offline usage of the app, requiring a local database to be maintained on the device such as with [Alberta Discover Guide](#) where a SQLite database was used to keep a local copy of a remote Dreamfactory database, and some features such as searching by radial distance had to be implemented manually as SQLite lacked these features

I very much enjoyed this job and eventually left as the work became less challenging, more routine, and I wanted to work on personal projects

**Technologies Used:** Python, Javascript, PHP, jQuery, HTML, CSS, SASS / SCSS, CakePHP, Docker, Twisted Python, Bash, RaspberryPi, Ionic, Cordova, npm, Node.js, Meteor.js, Ruby on Rails, C#, MySQL, SQLite, Stripe, Mailgun, Mailchimp, Google Maps, Leaflet, D3, Dreamfactory, Symphony, Cython

## **Athabasca University**

(4 months) Apr 2013 - Jul 2013

I was hired for a summer at Athabasca University and tasked on working on a 3D physics game for educational purposes. The game was made using the Kinect 1.0 and a C# app run on a desktop. The game used the XNA framework for potential release to the Xbox 360.

The game was a basketball throwing game in space, and we used the Kinect to track the motions of the player so they could virtually throw the ball. I wrote a finger tracking library to detect if a hand was open or closed using DSP concepts like low pass filtering and morphology operations. I later greatly improved the speed of the algorithm. The game also had a tournament tree for players to compete against each other. It also had procedurally generated textures for planets and the space background as well as a basic physics engine I wrote.

**Technologies Used: Kinect 1.0, C#, .NET, XNA**

## **Altus Geomatics Ltd**

(8 months) Jan 2012 - Aug 2012

For my 2nd and 3rd co-op terms I worked in the Calgary office of Altus Geomatics and mainly worked with two other co-workers on improving the GIS operations. The employees used intricate in-house software to generate several types of reports on quarter-sections and townships, and I was tasked with making sense of this legacy software written by someone no longer at the company.

I also had other jobs like researching into SOAP services for improvements and cleaning up a T-SQL database both literally by removing duplicates and bogus entries and programmatically by speeding up queries. I learned a lot about working in a team with daily scrums, agile methodologies, and code documentation.

**Technologies Used: C#, .NET, T-SQL, Javascript, HTML, CSS, SOAP, Selenium**

## **Endako Mines**

(4 months) Apr 2011 - Jul 2011

During my co-op term with Endako Mines in Fraser Lake, BC I mostly did research into iPhone app development and generally helped the IT department with their company website and other problems which occurred. I created a new website from scratch using standard PHP, HTML, and CSS with no frameworks other than jQuery. The website had a slideshow, company history, and a list of open jobs in the form of PDF files uploaded to a network drive and shown on the website.

I also created a Visual Basic app for a windows tablet computer in the mine equipment pit shop for employees to log maintenance hours on equipment.

**Technologies Used: Objective-C, PHP, HTML, CSS, MySQL, Javascript, jQuery, VB.NET**



# Appendix B: Skill Proficiencies

## Languages

Name	Experience	Uses
Python	5 years	Audio servers, CUDA programming, socket servers, hardware interfacing, Raspberry Pi, Robotics programming, Project Euler problems
C	4 years	Audio servers, socket servers, arduino, game programming, Project Euler problems
C++	3 years	OpenCV programming, university assignments
C#	1.5 years	XNA game programming, Kinect 1.0, SOAP Services, "dotnet" and .NET business apps
Java	2 years	Android apps, university assignments
Javascript / Node.js	5 years	Custom website UIs, mobile app programming with Cordova / Ionic, browser tools unit testing, Express.js servers, Project Euler problems
Typescript	2 months	Angular 2.0 apps, trying out alternative JS frameworks
JSON	3 years	Configurations, limited deploys
PHP	3 years	Full fledged media / digital display management system in CakePHP, Billing and Invoicing, as well as assorted work on CMS websites, Wordpress sites, and unit testing / cURL integration testing
HTML	5 years	Management portals, bootstrap pages, mobile apps, personal websites, freelancing, HTML5 tags
CSS	5 years	Custom website UIs, mobile apps, CSS3 classes, font imports
SCSS / SASS	2 years	Fragmented CSS classes, used for better organization
LESS	8 months	Fragmented CSS classes, used for better organization
Bash	3 years	File management, cron jobs, run scripts, operating system integrations for apps (ex: listing file directories)
make	2 years	Cross-platform functionality, compatibility fixes and cross-compilation of obscure library built for another platform
T-SQL	8 months	Speeding up slow cursor queries, database management and refactoring
MySQL	5 years	Various PHP applications and Wordpress sites
SQLite	2 years	Mobile app development, offline caching, and temporary transaction testing database
VHDL	8 months	University projects including an infrared touch screen, conway's game of life, and some hardware accelerated computations
Motorola MC6800 / x86 Assembly	8 months	Computer architecture concepts such as data hazards, pipelining, Hyperthreading, loop unrolling, compilers, as well as some programming experience making basic calculators

MATLAB	2 years	DSP algoritms, university assignments, audio / video processing
GLSL	1 year	XNA game shaders, browser GPU computation
Elixir / Erlang	6 months	Phoenix web server, Git pack client
Visual Basic / VB.NET	4 months	Touchscreen application and excel integration
Objective-C	4 months	iPhone game development
SuperCollider	1 month	Modular audio synthesis
Perl	1 month	Web scraping

Frameworks		
Name	Language(s)	Uses
OpenGL	C, C++, Obj-C	Game programming in C, iPhone game development in Objective-C
OpenCL	C, C++	University projects on parallelism
OpenCV	C, C++	DSP work on eye tracking algorithm
MPI	C	University projects on parallelism
CUDA	C, Python	Personal projects (image generation, vector processing) and self-taught from NVIDIA documentation
JACK Audio	C	Personal project for software modular audio synthesis using laptop audio in / out, RaspberryPi audio processing
Cython	C, Python	Speeding up python algorithms for work
Scrapy	Python	Web scraping for personal / work projects to gather JSON data
AngularJS (v1.x)	Javascript	Mobile apps using Ionic, single page applications for management portals
Angular (v2.0 and above)	Typescript	Research for single page app framework for personal projects, as well as latest Ionic versions
Vue.js	Javascript	Research for single page app framework for personal projects
Meteor.js	Javascript	Personal projects / hackathons where prototyping is key
jQuery	Javascript	Custom website UIs for video players, audio players, etc and generally used when no other framework will do
D3.js	Javascript	Graphs for monitoring dashboards
lodash.js	Javascript	General usage for code reuse and common code patterns
WebGL	Javascript	Personal projects involving vector processing
Google Maps API	Javascript	Shape pickers for geofences, and location display for contact pages

