



# Alex McCallum

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## Skills

Java	JavaFX, Android, Eclipse	Cloud computing	S3, Elastic Beanstalk
Data mining	Python, Spark, Pandas	Software tools	Git, JetBrains IDE, Jenkins, Docker
Front-end	AngularJS, Ionic, Typescript, Vue	Operating systems	Linux, Windows
Web design	Css, Sass, Less	Database	MongoDB, SQL
Back-end	Node.js, Django, Go	C++	Cmake, ImGui

## Work Experience

### BlueDrop

Systems Software Specialist

Halifax, NS

Oct 2018 - Current

- Developed various game engine binders in C++ for the VBS fusion / Sim SDK game engine as part of a VR platform.
- Refactored the binder factory to dynamically load C++ game engine binders at runtime, to optimize the development environment.
- Refactored the system's communication channels to improve the performance and structure of the channels.
- Developed overlay UI framework from screen graphic primitives provided by the VBS game engine.

### Ultra Electronics

Software Engineer Intern

Halifax, NS

Sep 2017 - Dec 2017

- Updated legacy code base, tests and configured the project to run in Docker and on Jenkins.
- Worked on various services of a highly configurable large scale C++ and Java microservice project managed by Supervisor with a JavaFX / Eclipse RCP UI.
- Created and optimized unit tests written in the C++ framework Gtest and acceptance tests written in the Python framework Robot.

### Gracernote

Full-Stack Web Developer Intern

Halifax, NS

Jan 2017 - Apr 2017

- Implemented a new Node.js api working extensively with MongoDB to form complex aggregate queries.
- Created a data management tool in AngularJS for non-technical co-workers to manage clients website data across development environments.
- Debugged and maintained a codebase with hundreds of sports widgets in AngularJS, Sass and Node.js using Webstorm.
- Created a custom AngularJS directive for implementing a performant scrolling table solution and tested for cross browser compatibility using BrowserStack.

### CWD Law Inc.

Full-Stack Web Developer Intern

Halifax, NS

May 2016 - Aug 2016

- Worked in a startup environment where I was responsible for all aspects of the web app, such as the audio editing software in Javascript, the site's design in CSS and the server in Django with a MySQL Database.
- Effectively communicated technical aspects of my work at the company to non-technical boss.

### Self-employed

Calculus Tutor

Halifax, NS

Jan 2015 - Nov 2015

- Assessed the aspects of mathematics the students struggled with and developed methods for the student to overcome their weaknesses.

## Additional Software Experience

### Mozilla

Ucosp Research Student

Remote

Jan 2018 - Apr 2018

- Worked remotely with students from across Canada under the leadership of data scientists from Mozilla on an open source project to clean web api call data, quantify data leakage and mine for tracking techniques.
- Created a Jupyter notebook for extracting and cleaning data from storage/cookie related api calls using Pandas.
- Mined S3 record store of JavaScript web api calls using Spark on a Databricks Python notebook for cookie tracking techniques, such as Evercookies.

### Plant Power

May 2017 - Aug 2017

- Created an Android application with a Firebase back-end for users to monitor a greenhouse as part of a course at Dalhousie University.
- As dev-ops I setup Android Studio, Github, Travis and the Hexiwear monitoring device for my team. As a developer I created a messaging system and setup the server to interface with the Hexiwear device.

### Shark Identification Network

Halifax, NS

Community Outreach Student

Sep 2016 - Dec 2016

- As a developer I created the translation and Google Maps features for a shark sighting mobile app using Ionic as part of a community outreach course for the Shark Identification Network to increase shark sightings for tracking and research purposes.

## Education

### Dalhousie University

Halifax, NS

Bachelor of Science, computer science major

Sep 2012 - May 2018

- Dean's list during the 2014/2015 and 2015/2016 fall and winter semesters.
- Specialized skills developed: network security, cloud computing, web centric computing, machine learning and data mining.

## Hackathon Experience

Dal IBM Hackathon	Full-stack Node.js app to help immigrants settle in NS	Halifax, NS. Mar 4-6 2016
Dal CS W16 Game Jam	Roman pottery themed infinite runner in Unity	Halifax, NS. Mar 18-20 2016
Dal CS Game Jam	2D platform shooter from scratch in Python	Halifax, NS. Oct 15-16 2016

## Hobby Projects

### Celebrities the Party Game

[Github Website](#)

May 2018 - Dec 2018

- Created a full-stack web app to play the party game Celebrities (similar to how you play a [JackBox TV game](#)).
- The networking components consist of multiple dumb clients (web app / players) passing messages back and forth through a message passing server to a PC application which contains the central game logic and UI. The passed messages use a layered protocol with a network layer (which process in the network does the message go to) and application layer (the data used by the process).
- Various challenges faced in the project: pivoting away from a WebRTC network solution, Synchronizing UI events across processes, WebSocket behavior when the process is in the background.
- Message passing server written in Go, hosted on EC2 and using Gorilla websockets, web app written in Typescript, central PC application was built on Electron with Typescript.

### Minesweeper WebAssembly App in C++

[Github Website](#)

Apr 2017 - Sep 2017

- Developed a web app to play minesweeper, the game logic is written in C++ with a compile target to WebAssembly and used Javascript for managing the UI.

References available upon request