AARON VONTELL

(860)-805-0050 ⋄ vontell@mit.edu ⋄ avontell.com ⋄ github.com/vontell

Quantum Programming, Full Stack Web, Android, UI Design, Accessibility, Consumer and System Planning

EDUCATION

Massachusetts Institute of Technology (MIT) Cambridge, CA
B.Sc. Computer Science and Engineering (GPA 4.71) *September 2014 - Present*

· **Relevant Coursework:** Introduction to Algorithms, Introduction to EECS, Mathematics for CS (Discrete Math), Computation Structures, Battlecode Competition, Software Construction, User Interface Design, Automata Computability and Complexity, Finance and Society, Quantum Computation, Artificial Intelligence, Communication Networks, Computer System Engineering, Quantum Information Science, Design and Analysis of Algorithms, Linear Algebra, Startup Experience 1 & 2. *Future:* Advanced Complexity Theory, Program Analysis, New Enterprises, Computer Language Engineering

EXPERIENCE (see more at avontell.com/#/resume (Battlecode, startups, contracts))

Rigetti Quantum Computing Berkeley, CA
Junior Quantum Engineer - Software Intern *June 2017 - August 2017*

· Designed and implemented algorithmic techniques for static analysis and optimization of quantum programs and circuits. Used these techniques, such as Pauli algebra, gate compression, and pattern matching, to optimize Rigetti's quantum virtual machine and quantum compiler.
· Implemented various quantum algorithms (amplitude amplification, classical processing of Shor's algorithm, superdense coding). Began a framework for transforming circuits into error-corrected versions.
· Wrote and deployed an interactive website to demonstrate the ability of quantum algorithms to approximate solutions to NP-complete problems (demo.rigetti.com), including an interactive JavaScript Bloch sphere.

RLE Quantum Photonics Laboratory (MIT) Cambridge, MA
Undergraduate Researcher *September 2016 - Present*

· Used ARTIQ, an FPGA programming library in Python, to create a library to perform conditional pulse sequences on Nitrogen vacancy centers in diamond. Used for Rabi oscillations and qubit initialization. See *avontell.com/papers/pulse.pdf*
· Helped design and implement a neural network to classify spectrum scans as characteristic of an NV center or not. See *avontell.com/papers/utility.pdf*
· Implemented a tunable (frequency and polarization) microwave resonator for excitement of NV centers at 2.87 GHz, from arXiv:1609.04492

CSAIL Decentralized Information Group (MIT) Cambridge, MA
Undergraduate Researcher *September 2016 - Present*

· Researched the current landscape of mobile accessibility and accessibility regulation, lead the design of a mobile accessibility framework for developers. Implemented this system for Android.
· Won a year-long funding award for completing my research, paid by The Seth Teller Fund.

Cigna Health and Life Insurance Bloomfield, CT
Software Intern *May 2014 - August 2016*

· Built web and Android software for health care applications, using AngularJS, Android Studio, RESTful APIs, gamification, and virtual reality.

PROJECTS (see many more at avontell.com/#/projects)

IndicatorBinder: IndicatorBinder is an Android library which makes attaching indicators to your ViewPagers super simple. I started this project out of my own frustration for easily adding this feature to one of my applications. Available for download via Gradle / Maven.

Highlights (YHACK 2nd Place): Created an Android application which utilizes a machine learning backend to parse recently missed videos from your YouTube subscriptions to provide 10-30 second "summary" clips of that video. These small clips of relevant information are then displayed in a Snapchat-like way.

bloch.js & qstudio: Built various JavaScript and web tools for quantum programming, such as an interactive Bloch sphere and quantum circuit editor.

Rally: An Android application, available on the Play Store, which helps friends find places to meet which are equidistant from their locations.