Aaron Goidel

New York, NY / Toronto, ON

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Creative and driven computer science student and software engineer with loves for learning and problem solving. Experience working in teams creating new technologies; strong leadership and presentations skills, and equally strong technical ability. Interested in applying computer science to areas of passion, such as law, food, finance, and music.

Experience

MLabs **Remote**
Software Engineer June 2022–
- Contributing to tools and apps on the Cardano blockchain
- Writing smart contracts and functional dependencies in Haskell & Purescript
- Leading a team of 3 other engineers in creating a platform for rewarding virtual engagement with crypto and an associated NFT marketplace
- Contributing to CTL, a library for creating Cardano transactions in the browser

NASA **Remote**
Software Engineering Intern Jan 2022–May 2022
- Helping to launch Artemis I to the moon!
- Contributing code and tests to a large-scale Java and C project in a team of 7 engineers
- Experience writing and testing Class-A, safety critical software
- Contributing to a launch subsystem which acts as a message bus providing pub/sub between end user applications and data collection systems

University of Toronto **Toronto, ON**
Teaching Assistant Sept 2021–Dec 2021
- TA for Introduction to the Theory of Computation
- Taught concepts including: Runtime complexity, proving correctness of iterative & recursive algorithms, finite automata, regular languages
- Assisted in lectures by answering questions and coaching students through handouts and activities
- Taught lab of 30+ students, reinforcing lecture through problems and QA

Highsnobiety **Remote**
Junior Software Engineer Jul 2020–Aug 2021
- Junior Engineer creating a pipeline for retail product data collection in Python
- Implemented, maintained, and improved upon web scraping and data parsing infrastructure for increased performance in data collection from retail partners
- Responsible for data collection performance increases of up to 80
- Assessed and performed triage for critical systems in real-time

National Security Agency **Fort Meade, MD**
Cybersecurity R&D Intern Jun 2019–Aug 2019
- Authored a patch in the Linux operating system, implementing a security hook and permissions for controlling file system watches, including test suite
- Experimented with machine learning models to estimate the proximity of Bluetooth Low Energy enabled IoT devices in obstructed spaces
- Presented progress and findings to groups of 20+ researchers in biweekly technical briefings

Education

University of Toronto **Toronto, ON**
B.S. Computer Science 2019–2023 (expected)
GPA 3.71/4.0
Coursework Machine Learning, Software Design, Theory of Computation, Programming Languages

Skills

💻 **Languages**: Python, C, JavaScript (TS, Node, Express, React), Java, Haskell, x86 Assembly
💾 **Technologies, etc:** Cardano, Solidity, Linux, Bash, SciKitLearn, Numpy, Git, Jira, OOP, Agile, and much more

Projects

Linux Security Module *C, Linux Kernel*
- Added new hooks to the Linux Security Module which allow for setting permissions on file system watches to prevent bad actors from obtaining pattern of life data from applications, and getting file descriptors through fs watches which they should not have
- I had to learn about writing new OS code, the filesystem and related syscalls, and how to navigate the complexities/politics of adding code to the Kernel.

Cookie *ReactNative, SciKitLearn*
- Created a smart cookbook application that uses ML and Graph Theory to optimize cooking in the home kitchen
- By viewing recipes as a dependency graph, and not as a list of steps, Cookie can intelligently merge smaller recipes into novel combinations and schedule steps in a way that makes sense

Hassle *Haskell*
- To further my understanding of functional programming, languages, and interpreters, I wrote this BrainF**k interpreter in Haskell

Decision Tree *ML, Haskell*
- To further my exploration of Machine Learning and of Functional Programming, I decided to implement a decision tree from scratch in pure Haskell
- My random forest is capable of classifying Real vs. Fake news articles and can identify heart disease

Simulating Galaxies *C, OpenGL*
- Written in pure C and OpenGL, this particle simulation shows us why galaxies formed into they shapes they did after the Big Bang
- By optimizing numerical methods, leveraging parallelization, and more, I was able to simulate 100,000+ particles on my laptop in real time

SafeSend *React, Express, Twilio*
- SafeSend is a web app for protecting sensitive information to be sent over untrusted protocols (like SMS)
- By applying 2-factor authentication to all your information, SafeSend generates a secure, ephemeral, one time, link that can be opened only by your intended recipient
- Hashing and encryption is done client-side so raw user data never hits the server, making the app HIPAA compliant