

# Andrew Liu

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## Education

### UNIVERSITY OF MARYLAND, COLLEGE PARK

Sept 2013 - May 2017 | College Park, MD

- BS in Computer Science, minor in Statistics
- GPA: 3.97/4.0 – Magna Cum Laude
- ACES Cybersecurity Honors Program graduate and President's Scholarship recipient

## Experience

### GOOGLE SOFTWARE ENGINEER

August 2017 – Present | Mountain View, CA

- Built risk-based re-authentication integrations into Google servers, scanning over 400 queries-per-second of potential hijacker traffic via RPC and opportunistically serving suspicious users second factor auth challenges.
- Maintained internal microservices that exposed authentication APIs over HTTP and RPC. Consulted and collaborated with teams looking to integrate with these APIs, leading to public launches such as LDAP-as-a-service for G Suite customers and two-factor authentication in Google Cloud virtual machines.
- Added UI support on the login page for sending Google Prompts to the iOS Gmail app. Tripled Google Prompt coverage for iOS users to 140 million users.
- Designed and prototyped a end-to-end login challenge where users could scan QR codes to approve their sign-in attempts from a remote browser. Created challenge pages to generate QR codes and approve logins using Soy and JavaScript, and maintained approval transaction state across several Java servers.
- Conducted A/B tests and analyzed data on various authentication features. Wrote Jupyter Notebooks to communicate experiment results with teammates. Improved pass rate of Google Prompts by 10% and overall success rate for Google sign-in by 5%, through the aforementioned experiments.
- Migrated Google Authenticator's build system to Bazel and removed all of the app's internal dependencies. Released an open source version of the Android app.
- Tech stack: Java, C++, Python, JavaScript, SQL, Soy, Guice, Dagger, Bazel, gRPC, Jupyter, Git, Mercurial

### DROPBOX SOFTWARE ENGINEERING INTERN

May 2016 – Aug 2016 | San Francisco, CA

- Investigated and analyzed performance issues with Dropbox's Python web server. Fixed server inefficiencies, reducing the loading time of Dropbox's website homepage by 33% as a result of the optimizations.
- Implemented an end-to-end flow written with React.js and Python to let users request team upgrades to Dropbox Business. Integrated with an RPC service to send email campaigns to Dropbox team admins.
- Tech stack: Python, React.js, PxyL, Vagrant, Git

### GOOGLE SOFTWARE ENGINEERING INTERN

May 2015 - Aug 2015 | Kirkland, WA

- Created an exploitability detection engine in Breakpad (an open source crash reporting suite written in C++) that predicted whether a binary crash occurred due to attacker exploitation by implementing triaging heuristics such as buffer overflow detection and binary permission checking.
- Open sourced all internal changes to Breakpad for public usage and auditing.

### US ARMY RESEARCH LABORATORY SECURITY RESEARCH INTERN

May 2014 - Aug 2014 | Adelphi, MD

- Coauthored a research paper for the USENIX security conference in 2015, detailing the usage of code stylometry and machine learning as a means of authorship attribution for anonymous samples of source code.
- Wrote a Python web crawler to scrape historical source code entries from programmers participating in the Google Code Jam programming competition. Cleaned up scraped source code for use as a corpus of training data.

## Skills

### LANGUAGES

Java, Kotlin, Python, SQL, HTML/CSS, JavaScript, TypeScript, Soy, C/C++, Ruby, Go,  $\LaTeX$ , R

### TECHNOLOGIES

Git, Mercurial, gRPC, Guice, Dagger, Jupyter/Colaboratory, React.js, Vue.js, PostgreSQL, MongoDB, Wireshark, IDA Pro, GDB