

# Allison Bellows



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allison-bellows.com

## Experience

### Facebook / Novi

Production Engineer (systems software engineer)

Menlo Park, CA  
02/20 - present

- Owner and core contributor for several of Novi's backend microservices, including:
  - \* Custody services (sign/verify transactions, do PubSub with supported chains)
  - \* PKI crypto service (create/handle "signed intents" between services)
  - \* HTTP Proxy service (handle all HTTP ingress, DOS/DDOS protections, mTLS, perf tracing)
- Led team of 4 engineers to scale HSM infra. Went from 3 manually-managed HSM hosts to:
  - \* A full containerized HSM fleet (>200 containers)
  - \* Multiple supported currencies and security worlds (hot/warm/cold wallets)
  - \* Automated host management, SEE code deployment, dynamic access control, and threat detection
  - \* >10x increase in throughput per container
- Developed secure HSM code and operations ("ceremonies") to protect high-value keys. Materially increased security against side-channel attacks and insider threat risks and proactively saved ~80 man-hours + ~\$20,000 per quarter with ceremony automation
- Led the critical asset standardization workstream which raised the bar across the company for managing its most important digital assets - cryptocurrency root keys, root CA keys, etc.
  - \* Drove the engineering requirements for a new critical operations center, opening in February 2022
- Core contributor to custom developer tooling including deployment pipelines, regression/e2e testing frameworks, debugging tools, and monitoring/alerting. Led workshops, office hours, and drills to train Novi backend teams (~60 engineers) in production excellence.

### Facebook

Production Engineer Intern

Menlo Park, CA  
05/19 - 08/19

- Built a program to diagnose low-level causes for large-scale deployment issues in the Ads Serving system
- Exposed diagnostic program with Python CLI and REACT webapp which, combined, saved ~\$1.2M in downtime
- Proactively built probabilistic (LSTM) noise-reduction for said program, initial version reduced noise by 45%

### Microsoft

Software Engineer Intern

Redmond, WA  
05/18 - 08/18

- Used dense cohort clustering and CNTK to improve a simple recurrent neural network for interpreting user feedback (Azure and Windows Feedback Hubs)
- Identified over 30 systemic issues and reduced "false negative" loss by ~40% in August alone
- Helped build a precision healthcare app for Hack for Good division of OneWeek hackathon - won 3rd place globally

### Brigham Young University

Teaching Assistant/Research Analyst

Provo, UT  
12/17 - 05/18

- Translated Excel/VBA to a sleek Python library for the Graves Research Lab to analyze proteomic biomarkers
- Developed a framework to combine large spectrometer datasets into a single quantitative "BioID"

## Education

### Brigham Young University

B.S. in Computer Science

Minors in Mathematics and Applied Statistics

Provo, UT  
09/15-12/19

GPA: 3.81

- Leadership: Entrepreneurship Club (VP of Events), RHA (President)
- Awards: Undergraduate Excellence in Mathematics Award 2018, Phi Eta Sigma, Phi Kappa Phi
- University Orchestra (Concertmaster), Linux Club, ACM Club, Genetics & Biotech Club, Debate Club
- Volunteering: Volunteer Income Tax Assistance program, Provo Cleanup Crew

## Skills & Interests

### Skills

- General: Linear Algebra, Bayesian Inference, debugging, learning languages (spoken and code), leadership, string instruments
- Programming languages: proficient in Python; intermediate in Rust, C++, Java, Dart, JavaScript, CSS; learning C, Kotlin, Swift
- Tools: Linux, Thrift, GraphQL, SQL, PyTorch, PKCS#11, React, CNTK, Node.js, Flutter, Spark

### Interests

- Applied cryptography - especially user-friendly PKI and multi-party computation
- Applied statistics - especially differential privacy, federated learning, and reinforcement learning
- Bioinformatics
- Community involvement: Toastmasters, Atlas