Joshua Brown

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Work Experience

Cloudflare, Inc. • May 2022 - August 2022
Research Intern (Cryptography)
- Implemented RSA threshold signatures in Go and integrated them into Cloudflare's SSL termination stack
- Released the implementation into CIRCL, Cloudflare's open source cryptography library
- Co-Authoring two blog posts on the topics of Shamir secret sharing, Lagrange polynomial interpolation, and RSA threshold signatures that will be published on Cloudflare's blog

TuneReel LLC • November 2020 - January 2021
Full Stack Developer & Application Security Engineer
- Managed team of three developers for a start-up company in the music licensing business
- Established an improved process of code and security review, documentation, and quality assurance measures
- Led new hire interview process for programmer including creation of test to accurately assess applicant skills

CMIT Solutions • July 2020 - August 2020
IT Security Intern
- Recommended to client, who suffered recent phishing incident, various cybersecurity solutions
- Reviewed and evaluated client needs and developed projection of costs to implement a corrective project
- Designed Excel matrix using pivot tables with advanced filter functionality to organize and compare products

Tamarack Tower • November 2019 - September 2022
Web Developer and Server Administrator
- Designed and developed web pages to enable the online purchase of event tickets and membership subscriptions
- Constructed and managed a Google Cloud Compute VM instance to host the website and to store donor data in a PostgreSQL database

MacAndrews & Forbes Incorporated • July 2018 - August 2018
Cybersecurity Technician Intern
- Created and managed AWS Ubuntu and Windows instances
- Configured network security rules and identified and mitigated irregularities using Sophos Central
- Reviewed network logs and generated user activity reports using Palo Alto Networks Console

Port Chester - Rye Brook Public Library • March 2018 - March 2022
Web Developer and Server Administrator
- Developed web pages to facilitate donations and designed a database to store donors' form data
- Integrated the PayPal payment API to accept debit/credit cards, bank accounts, and PayPal accounts
- Set up and managed a Google Cloud Compute VM instance to host the web pages and to generate donor data reports

Projects

VictorCrypto • July 2022 - Current
Cofounder and President
- Started the first and only cryptography club at The University of Michigan
- Working with Prof. J. Alex Halderman and Prof. Paul Grubs who are advisors of the club
- Organizing weekly meetings to discuss cryptography and security related topics

ScreenView • April 2021 - July 2022
Application Development
- Co-developed a cross platform desktop application implementing a custom protocol using Rust with native macOS APIs and Electron
- Contributed to multiple open source libraries and projects by opening issues and successfully creating pull requests that were merged
- Rewrote two existing open source SRP (cryptographical PAKE) libraries in TypeScript and Rust under the MidoNet and RustCrypto organizations respectively

Protocol Design
- Designed an open source suite of cryptographical and application level networking protocols culminating in a zero configuration end to end encrypted remote screen viewing and controlling application and authored a 23+ page LaTeX specification
- Applied cryptographical algorithms and protocols such as the SRP PAKE, HMAC, HKDF, TLS, ECDH, Digital Signatures, the BLAKE3 hash, the XChaCha20Poly1305 AEAD, replay avoidance, MITM avoidance
- Specified application level networking protocols running over TCP and UDP with encryption, authentication, UDP amplification prevention, congestion control, and quality of service (QoS) techniques

Education

University of Michigan • Expected Undergraduate Graduation 2025