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| Nick Brown |

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# Professional Summary

Builder at heart, driven by curiosity and craft—from low-level firmware to cloud-scale systems. I thrive on understanding systems end-to-end and building with care at every layer, with a focus on security, reliability, and innovation. I’m especially drawn to technologies that challenge conventional models—decentralization, zero-knowledge proofs, emerging AI—and am seeking roles where I can bring meaningful value through evolving tools and ideas like Rust and blockchain.

# Professional Experience

## Open-Source Contributor | April 2024 – Present

* Expanded hardware/product design capabilities through electronics projects, circuit design/layout
* Built Rust proficiency by developing firmware for personal projects and contributing to open-source projects in the Rust community.
* Focused on skill development in emerging technologies aligned with decentralized systems and blockchain ecosystems

**Microsoft | Redmond, WA | 15 Years**

## Software Development Engineer | Defender for Cloud DevOps | September 2023 – April 2024

* Improved security evaluation pipelines for Azure and customers by developing and maintaining Security DevOps CLI tooling and workflows.
* Owned and advanced the open-source Template Analyzer IaC static analysis tool, delivering major features like full Bicep support and source mapping integration.
* Improved security reliability for Azure and customers by redesigning DevOps pipelines and dependency packaging to eliminate single points of failure in key downstream workflows.

## Security Software Engineer | C+AI Security Green Team | April 2016 – September 2023

* Founding member of a new security team paradigm focused on addressing systemic security issues, leading to the development of innovative solutions to address systemic organizational risk.
* Took ownership of the widely adopted AppAuthentication library (250M+ downloads), added key features to simplify developer identity management, and led its successful transition to Azure.Identity.
* Mitigated systemic risk from overprivileged RBAC roles in Azure by proposing and leading a scalable solution—work led to major security improvements, a dedicated team, and a patented algorithm.
* Reduced risk from unused and compromised credentials by implementing a workflow to process all AAD sign-in telemetry and correlate it with sources like Red Team data.
* Reduced credential exposure in Azure source code by 99.5% in one year by spearheading a PoC to detect credentials and drive remediation through automated attribution, bug creation, and reporting.
* Drove adoption of a key Azure security hygiene tool in air-gapped/nation-state cloud environments; contributed features to accelerate issue detection and remediation.

## Security Engineer | C+AI Security Assurance | March 2014 – April 2016

* Led security initiatives for all Azure authn/authz services, including authoring and reviewing threat models, conducting security reviews, managing external security reviews, and triaging security incidents.
* Actively prevented security regressions by developing modular E2E security test framework, with an architecture that enabled adoption across teams.
* Laid the foundation for a new Azure security product by implementing initial IaaS and PaaS scanning agents and collaborating with internal teams to define baseline security policies.

## Software Development Engineer in Test | Azure Active Directory | October 2010 – March 2014

* Ensured robust and secure authentication across systems, including Office 365, by testing developing identity protocols and standards (OAuth2, SAML, WS-\*, etc.)
* Enabled seamless, issue-free live migrations of security token services for Azure customers with extensive testing.
* Accelerated and improved test automation reliability for stakeholders by leading development of a robust testing infrastructure that compartmentalized tenant provisioning and management complexity.
* Developed several internal tools used by teams for ad-hoc testing and manipulating authentication protocol flows.

## Software Development Engineer in Test | Forefront Protection Manager | October 2009 – April 2010

* Conducted comprehensive testing of client agent and software across diverse environments, including localization and globalization scenarios.

# Blockchain/Crypto Experience

* **Fundamentals**: strong foundation and understanding of broad spectrum of math and cryptographic technologies used in general cryptography and extending to blockchains and cryptocurrency. Hash/encryption algorithms, commitment schemes, consensus algorithms/BFT, hands-on experience working with newer zero-knowledge proofs (zk-SNARKS/zk-STARK) and applications.
* **Ethereum Technology:** broad familiarity with development and tech stack, e.g. smart contracts, EVM, Solidity, smart contract verification. Hands-on experience with using many dApps, L2s/sidechains such as Base, Polygon, Arbitrum, Optimism. Run own testnet node (Goerli, Hoodi, Sepolia).
* **Staking/Mining:** Run own resilient Ethereum staking operation with 99.9 % uptime. In 2017, used dynamic setup using favorable AWS spot instance pricing to mine at scale.

# Technologies Used

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| **Scripting/Programming Languages:** .NET/C#/PowerShell, C/C++, Rust, Python, Bash, Go, Javascript/Typescript  **Virtualization/Containers:** Docker, lxc/lxd, k8s, Proxmox, Hyper-V | **Cloud Providers:** Azure (extensive experience with many services), AWS (EC2/spot instances, S3)  **Operating Systems:** Windows, Linux (primarily Debian family, but also Red Hat) |

# Education

## B.S. in Computer Science and Engineering | 2009 | University of California, Los Angeles

**Graduated Magna cum Laude, 3.85 GPA, member of TBP and UPE honor societies**

# Activities and Interests

I enjoy working on hands-on electronics and embedded systems projects, typically involving microcontrollers (Atmel, ESP, nRF, Raspberry Pi, RISC-V) and custom firmware development. My projects range from creating bespoke Nixie tube clocks and devices to developing home automation solutions that integrate with Home Assistant. I'm also passionate about continuous learning - have been studying Japanese on and off for many years while exploring new programming paradigms and emerging technologies.