

# Aaron McLean

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## Education

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### Carleton University, Ottawa, Ontario

*Bachelor of Science, Computer Science (B.C.S)*

- Recipient of C.J. Mackenzie Scholarship Award
- Pursued research in Quantum Communications and Networking

## Work Experience

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### Software Developer

2024 – 2025

*Chimoney, Ottawa, Ontario*

- Collaborated with Chimoney's mobile development team to improve the company's mobile payment API.
- Developed a modular iOS SDK in Swift leveraging Alamofire for network handling, XCTest for unit testing, and wrote extensive SWAGGER API documentation to facilitate integration by third-party developers.

### IT Infrastructure Consultant

2023

*Stone Tree Clinic, Collingwood, Ontario*

- Designed and implemented a secure file-sharing system based on the clinic's specifications using network-attached storage, incorporating role-based access control (RBAC) and encrypted data transfer protocols.
- Performed comprehensive diagnostics and timely resolution of critical point-of-sale functionality issues.

### Technology Representative

2018 – 2022

*Staples Business Depot, Collingwood, Ontario*

- Enhanced technical communication by clearly conveying complex concepts to non-technical customers, effectively driving sales through tailored recommendations of premium software and hardware solutions.
- Performed diagnostics across diverse technical issues, demonstrating expertise in system troubleshooting, performance optimization, and solution deployment to consistently deliver outstanding customer satisfaction.

## Applied Projects

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### Quantum-Assisted Blockchain Consensus (Capstone Research Project)

- Designed and developed a quantum-enhanced blockchain consensus protocol in Qiskit, replacing traditional proof-of-work mechanisms with quantum fidelity checks to demonstrate a quantum-safe blockchain model.
- Implemented quantum hashing, teleportation, and entanglement validation to ensure immutability.
- Conducted comprehensive performance benchmarking between quantum and classical consensus algorithms using IBM's Qiskit Aer simulator, accompanied by an extensive whitepaper detailing the findings.

### Neural Network Architecture

- Developed and optimized a convolutional neural network for diagnostic classification from chest X-rays.
- Designed a CNN architecture using mixed precision training on AWS, maximizing hardware compatibility.
- Adapted the CNN for deployment on resource-constrained mobile hardware by implementing TensorFlow mixed precision policy and optimizing architecture specifically for high performance on Apple M-Series CPUs using TensorFlow Metal acceleration.

## Technical Skills

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### Programming Languages:

C, C++, Rust, Swift, Python, Haskell, JavaScript, TypeScript

### Frameworks & Libraries:

Node.js, jQuery, JSON, RESTful APIs, TensorFlow, MATLAB, Express.js, OpenGL

### Tools & Technologies:

Git, SVN, JIRA, Travis CI, AWS, Azure, Docker, Kubernetes, SQL, MongoDB, Jupyter, IBM SPSS, QNX, Embedded Systems, Real-Time Operating Systems (QNX), Parallel Computing, Compiler Construction