Andrew Jemin Choi

⚑ *Canadian Citizen*   ⌂ *USA Permanent Resident*

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Experience

Algorand   *Boston, MA*
SOFTWARE ENGINEER (ALGOCHOI)   *Jun 2021 - Present*

- Worked on open-sourced consensus protocols, compilers, tools, and infrastructure in Go for a $1Bn+ market cap blockchain (go-algorand), founded by Turing Award cryptographer Silvio Micali
- Developed parts of the Algorand Virtual Machine (smart contract assembler) and PyTeal (high level language) to allow safer and better programmability for smart contracts; performed smart contract audits to check for security and correctness
- Designed, developed, and maintained features, tests, and infrastructure for the Algorand Go/Java/Python/TypeScript SDK
- Improved integration testing in CI environments by using a dev-mode network, reducing build times by 60% in four repositories
- Introduced new AVM v6 features (recursive inner contract calls) for the Algorand database indexer and Chrome Web debugger

University of Toronto   *Toronto, ON*
GRADUATE RESEARCH STUDENT, BLOCKCHAIN LAB   *Sep 2019 - Dec 2021*

- Researched novel methods to improve authenticated storage performance and test transaction execution throughput for a new multi-layered Merkle-Patricia structure in EVM-compatible systems *(Master Thesis; IEEE ICBC '22 Distinguished Paper Award)*
- Developed performance benchmarks for Ethereum clients to evaluate a run-time smart contract validation tool *(ACM PLDI '20)*

University of Toronto   *Toronto, ON*
TEACHING ASSISTANT   *Sep 2016 - May 2021*

- Developed and wrote automated testers for graduate compilers assignments in C++, ANTLR, and LLVM (CSC488 - Compilers)
- Managed groups of 50+ students to build large software projects in C++/Java, held weekly code reviews, and taught students about software development tools such as git, gdb, gprof, perf, and unittest (ECE297, CSC207, ECE326 - Software Design)
- Received "Outstanding" TA ratings from course surveys, with an average rating of 6.87/7; TA'ed 8 Computer Engineering courses

Google   *Remote (Sunnyvale, CA)*
SOFTWARE ENGINEERING INTERN   *Jun - Sep 2020*

- Worked on the Global Networking team to develop an OpenConfig service in Go to aggregate and monitor vendor-neutral routing data, and created a client to stream events using gRPC APIs to log abnormal network activity

Amazon Web Services (AWS)   *Seattle, WA*
SOFTWARE DEVELOPMENT ENGINEER INTERN   *May-Aug 2018, 2019*

- Worked on the DynamoDB team to develop a Java client library for RESTful APIs to monitor and replace stale/faulty EC2 hosts for table indexing requests (Summer 2019)
- Worked on the AWS Internet of Things (IoT) team to create Python tools to streamline the on-boarding process for devices, reducing user wait times by 60% (Summer 2018)

Education

University of Toronto
MASTER (MSc) IN COMPUTER SCIENCE   *Dec 2021*
Thesis: *LMPTs: Eliminating Storage Bottlenecks for Processing Blockchain Transactions*
Advisor: *Fan Long*
BACHELOR (BASc) IN COMPUTER ENGINEERING WITH HONOURS   *May 2019*

Projects

MLH Hackathons [devpost: ajchoi]
PYTHON, FLASK, SOLIDITY, REACT NATIVE, REDIS, CASSANDRA, FIRESTORE, GCP

- Received $1000+ in awards as a competitor at collegiate hackathons (UofT, Dartmouth, CU Boulder, Ryerson), building projects addressing social issues ranging from tackling social anxiety to minimizing food waste in local communities
- Mentored younger students to ideate, implement, debug, and pitch technical solutions for school hackathons