Simon Ou

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Skills

Languages: TypeScript, Python, C#, C++, C, Java, JavaScript, HTML, CSS, SQL
Frameworks: React, Next.js, Node.js, Express.js, ASP.NET, GraphQL, PostgreSQL, Kafka, Xamarin, Arduino, OpenGL, Unity
Tools: AWS (EC2, RDS, S3), Azure (Blob Storage, Cosmos DB, Functions, SQL, VM), GCP (Firebase), Docker, Git, Android, Linux

Education

Bachelor of Software Engineering | University of Waterloo   Sep 2021 – Present
Courses: Data Structures & Algorithms, Digital Circuits, Object-Oriented Programming, Operating Systems

Work Experience

TOOLBX 🔗 | Software Engineering Intern   Jan 2023 – Dec 2023
- Architected a new quote-to-order fulfillment and payment system to enable **42%** of all previously manual conversions to be transacted within an end-to-end buyer-seller platform using *React*, *Express*, and *PostgreSQL*.
- Augmented search algorithms, using *GraphQL* and *Algolia*, to support granular price variations across **130K+** products.
- Engineered robotic process automations, written in *TypeScript*, to autonomously extract, parse, and synchronize **$500K+** of daily invoices from third-party enterprise resource planning software needed by construction materials businesses.
- Devised a *GitHub Actions* CI/CD workflow to bring compatibility-related deployment failures from **6+** per month down to **0**.

Plenty of Fish 🔗 | Software Engineering Intern   May 2022 – Aug 2022
- Modernized the online dating experience for **1M+** daily worldwide users by reconstructing profile management, dating preferences, and account settings webpages from the ground up using *React* and *TypeScript*.
- Formulated new *REST API* endpoints for profile marketing features, using *ASP.NET*, *Kafka*, and *PostgreSQL* within a distributed microservice architecture, to boost new user engagement by **12%**.
- Implemented unit and integration tests across the stack, using *TypeScript* (*Jest & Enzyme*) and *C#* (*XUnit & Moq*), to ensure program correctness and determinism with at least **80%** front-end and **98%** back-end code coverage.

Pentabyte Studios | Lead Software Engineer   Jan 2022 – Aug 2022
- Spearheaded the production of an open-world multiplayer role-playing game built using *Unity*, *Polygon*, and *Azure* services.
- Directed and coordinated art, design, and development teams comprised of **10** ambitious employees.

Projects

Upcoming 3D Battle Royale | Unity, Azure, .NET, C#   Oct 2022 – Present
- Developed and optimized an AES-encrypted multiplayer server, using *.NET UDP* sockets, to securely communicate complex real-time player movement data across network clients at less than **5 KB/s** per client.
- Incorporated a client prediction and server reconciliation algorithm to promote smooth *Unity (URP)* gameplay and server-driven state synchronization while consuming less than **1 ms** of time overhead per frame.

Automated Voice-Controlled Chessboard 🔗 | Arduino, Python, C, Woodworking, 3D Printing   Oct 2021 – Nov 2021
- Programmed a stateful move-checking chess algorithm, in *C*, to guide gameplay on a **25" x 25"** plywood chessboard complex.
- Consolidated move-checking, speech-to-text, and mechanical actuation subsystems, using *Python* on an *Arduino*, to allow stepper motors and an electromagnet to respond correctly to vocally issued move commands.

YRDSB Student Planner App 🔗 | Android, Xamarin, C#, Java   Mar 2019 – Mar 2020
- Designed and built an *Android* utility app for students of the York Region District School Board, employing Google and Twitter APIs to fetch live updates related to school announcements and calendar events.
- Centralized client-server communication with a handmade *.NET TCP* socket server that used *SMTP* to authenticate users through passwordless student email verification.

Awards

Perfect Score, *Fermat Mathematics Contest* (23/19393 worldwide)	*Feb 2020*
Contender, *Canadian Mathematical Olympiad* (83/7000+ in Canada)	*Mar 2020*
Bronze Medallist, *Canadian Computing Olympiad* (24/2827 in Canada)	*May 2020*
Semi-Finalist, *International Championship of Collegiate A Cappella*	*Jan 2024*