Tanson Lee

US Citizen

Personal Website: https://tansonlee.me
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Skills

- **Languages:** C++, C, Python, Typescript, JavaScript, Bash, GLSL, SQL
- **Technologies:** Redis, PostgreSQL, Numpy, OpenGL, GraphQL, Node.js, Three.js, Next.js, React
- **Tools:** Git, AWS, Linux, Stripe, WebSockets

Experience

Global Illumination — Manhattan, New York   Jan – Apr 2023
Software Engineer

- Extended the **in-house physics engine** to support swimming and ladders, unlocking primitives for new game dynamics.
- Created realistic water reflections by developing performant **OpenGL shaders** using the Screen Space Reflection technique
- Redesigned the **NPC behavior microservice** to support Newtonian Physics, allowing for 3-dimensional NPC movement.
- Implemented fish and bird NPCs with realistic **flocking algorithms**, improving the visual appeal of the world.
- Developed **player power-up infrastructure** using the Entity Component System architecture, expanding creative possibilities in minigames and questing.
- Improved **questing infrastructure** by adding an NPC interaction step allowing for dialog, gifts, and rewards improving immersiveness. Additionally, introduced questing features such as map indicators, progress tracking, and internal tooling.

Paper — San Francisco, California   May – Aug 2022
Software Engineer   (part-time) Sept – Dec 2022

- Designed and built an **auction system** for digital goods. Used Redis to decrease blockchain read times by 94% and message queues to decrease write failures by 95%.
- Overhauled the **authentication and authorization system** to support organizations with members and roles, improving collaboration for over 85% of customers.
- Built **localization infrastructure for the SDK** and added French support, expanding reach to European customers.
- Redesigned the **onboarding flow** to include checks for liveness, documents, and risk indicators for legal compliance.

Dreamschools — Toronto, Ontario   Sept – Dec 2021
Software Developer

- Managed all technical operations including code reviews, deploys, and providing technical guidance on business decisions.
- Created infrastructure for coupons, gift cards, refunds, and taxes in the checkout system which processes $25,000+/month.
- Reduced tech debt in the checkout, financial reports, and modals improving modularity and shrinking module sizes by 45%.

Sciex — Toronto, Ontario   Aug 2019
Software Developer

- Implemented a Snorkel labeling algorithm with Numpy, reducing peptide analysis time by 98% for mass spectrometry data.

Projects

Ray Tracer   https://github.com/tansonlee/ray-tracer

- Built a multi-threaded ray tracing engine in C++ with support for multiple materials such as metal, plastic, and glass.

PyScript – An Interpreted & Compiled Programming Language   https://github.com/tansonlee/PyScript

- Developed a scripting language with all core features including variables, functions, loops, conditionals, I/O, and comments.
- Implemented a compiler and assembler to translate down to a custom machine language which runs on a custom runtime.

Notifyr – Developer Tool to Notify Your Customers   https://notifyr.vercel.app/

- Created a developer tool with an SDK, API, dashboard, and documentation to allow apps to send notifications to customers.

Fooder – Collaborative Food Choice Application   https://fooderweb.netlify.app/

- Built a real-time matching app that helps friends decide where to eat using web sockets and rooms.

Education

University of Waterloo, Bachelor of Computer Science   GPA: 4.0 | 2020 - Present

- **Courses:** Operating Systems, Algorithms, Data Structures, Databases, Networking, Compilers.
- Hack the North mentor & participant, Delta Hacks participant, Intramural volleyball player.