Ken Chen

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EDUCATION

University of Toronto   Toronto, ON
*Bachelor of Applied Science, Computer Engineering + **PEY Co-op***   Sept. 2024 – Apr. 2028

EXPERIENCE

Software Developer   Sep. 2025 – Present
aUToronto   Toronto, ON
- Optimized quintic spline trajectory generation for a Level 4 autonomous vehicle using arc-length parameterization, computing 70k+ lane-change paths with curvature validation at sub-millisecond average latency
- Reduced nodemap pathfinding runtime by 70% using R-tree/STRtree spatial indexing, accelerating 33k intersection queries from $O(n)$ full-polygon scans to $O(\log n)$ bounding-box lookups
- Eliminated redundant geometry instantiation by caching boundary LineStrings and reusing trajectory buffers

Software Engineer Intern   May 2025 – Aug. 2025
TD Bank   Toronto, ON
- Spearheaded the engineering of an internal-to-external asset mapping pipeline with database-backed tracking, accurately connecting 98% of 20,000+ asset pairings across relational and NoSQL stores
- Programmed a Python automation framework with multi-threaded processing and database connection pooling for security compliance and API status assessment across 100,000+ enterprise assets
- Deployed a network discovery crawler that identifies 99% of 5,000+ shadow assets utilizing ETL processing for database integration and ServiceNow asset ingestion

PROJECTS

Lattice - 3D Graphical Imaging System | *C++, Unity, OpenCV, OpenGL*   Sep. 2025
- Built a Unity-based 3D point cloud streaming framework with C++ and C# for mixed reality visualization
- Architected 3D geometric algorithms for point cloud reconstruction and calibration using pinhole transforms, k-d tree coordinate indexing, and convex hull alignment
- Designed a network rendering pipeline with custom GLSL shaders for high-performance real-time data streaming

Stocker - Full-Stack Stock Trading Simulator | *React, Node.js, Firebase* Jun. 2025 – Aug. 2025
- Constructed a trading simulator with low-latency API integration, trade execution, and user leaderboard updates
- Implemented live price streaming, client-side data caching, and automated portfolio rebalancing via cloud function
- Integrated account authentication, distributed API limiting, and batch transactions with concurrency control

Spooky Spikes - 3D Obstacle Avoidance AI | *Pytorch, Tensorflow, Keras*   May 2025 – Jun. 2025
- Trained a DQN agent to play a reflex-based game by learning to jump and duck over obstacles with 99% accuracy
- Optimized model using 3-layer ELU network, target network synchronization, and adaptive epsilon exploration
- Programmed an AI decision dashboard and 3D rendering pipeline using 2D polygon projection with depth sorting

AWARDS & CERTIFICATIONS

Hack the North - Finalist Winner & YC Invitee | *Hack the North*   2025
- Won Best Overall and YC Unicorn Prize interview over 250+ teams at North America's largest hackathon
- Created Lattice, a 3D holographic point cloud projection system using Xbox Kinects and Microsoft HoloLens

AWS Certified Cloud Practitioner | *Amazon Web Services*   2025
- Acquired foundational AWS cloud and architecture knowledge

Governor General Academic Medal | *Thornhill Secondary School*   2024
- Awarded for achieving the highest academic average among the graduating class

TECHNICAL SKILLS

Languages: Java, Python, C/C++, JavaScript, SQL, TypeScript, Ruby, HTML/CSS, Kotlin
Developer Tools: Git, Docker, Kubernetes, Ansible, Postman, Firebase, AWS, Azure, GraphQL, MySQL, PostgreSQL, MongoDB, Linux, Unix, Jira, ServiceNow, SonarQube
Frameworks & Libraries: NumPy, Pandas, TensorFlow, PyTorch, FastAPI, Flask, Django, React, Angular, Node.js, Selenium, OpenCV, OpenGL