Adam Chen

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Experience

Oracle Labs (Incoming)   Jan 2025 – Apr 2025
Compiler Research Intern | Graal, Java, Just-In-Time Compilation   *Zürich, Switzerland*
- Extend GraalOS Virtualization Technology by implementing **Just-In-Time compilation** using the Truffle Framework
- Contribute as a Graal team member, writing foundational code used by **AWS, Azure, Google and millions of others**.

Cynorix Inc.   May 2024 – Present
Full Stack Developer | React Native, Express.js, PostgreSQL   *Waterloo, Ontario*
- Developed efficient algorithms to suggest content to users using **Vector Embedding and Semantic/Full-Text** search.
- Improved pgvector search **performance by 5x** using tuned queries and indices.
- Optimized client data loading latency using Async WebSocket and Database Cursors.

Electrium Mobility   Feb 2024 – Present
Firmware Developer | C++, ESP32, Real Time Programming, Bluetooth LE   *Waterloo, Ontario*
- Engineered a **low-powered** operating metric monitoring system for an e-skateboard with Bluetooth LE
- Streams data in **real-time ($<$100ms latency)** to a mobile iOS application for user-friendly use.

Desa Analytics Corporation   Jul 2023 – Aug 2023
Machine Learning Intern | Python, Keras, Deep Learning   *Toronto, Ontario*
- Implemented proprietary Deep Learning models in Keras for regression, classification, and time-series analysis
- Performed data pre-processing on over **95 000** samples and executed hyperparameter optimization to reach **97% accuracy** without over-fitting

Projects

Toyota Innovation Challenge (Winner) | *Python, Computer Vision, PyTorch, Fine Tuning Deep Learning Models*
- **Winning project** in the Toyota Innovation Challenge, exceeding 30 competitors.
- Developed a **cutting-edge Machine Learning** vision model (based on YOLOv8) for real-time inspection of sticker quality (alignment and coverage), ensuring product consistency and reducing manufacturing waste.
- **Achieved superior performance** in low-contrast conditions, a significant challenge for traditional vision systems.

WStream – High-Performance WebSocket Library | *C#/.NET, Open Source Library, Performance Tuning*
- Developed WStream, a high-performance WebSocket library boasting **8,000+ installs** on NuGet.
- Achieved blazing-fast throughput exceeding **10+ Gbps**, enabling efficient data exchange.
- **Prioritized security** with robust AES-256 encryption and Elliptic Curve Diffie-Hellman key exchange.

VirtualEdit – Highly Optimized Game World Modification | *Java, Minecraft, Server Plugin, Data Structures*
- Modify vast areas **($>10^9$ blocks)** without client/server-side lag, thanks to an internal 3D implicit segment tree and real-time packet manipulation.
- Developed an efficient data structure enabling **log-time operations on the order of 100ns** over arbitrary ranges.

Awards and Achievements

USA Computing Olympiad: *Platinum Division — Highest Division*, ranked top 96 globally (US Open 2021)
Schulich Leader Scholarship ($100,000): *Offered by Schulich Foundation and McGill University* (2023, Declined)
Undergraduate Research Award ($6000): *Natural Sciences and Engineering Research Council of Canada* (2024)

Technical Skills

Languages: C#, Java, Python, C/C++, Rust, Bash, JavaScript, TypeScript, HTML/CSS, SQL
Technologies: .NET, ASP.NET (Core), WPF, Node.js, Svelte, React.js, Express.js, TensorFlow, PyTorch, Keras, Pandas
Tools: Kubernetes, Helm, Docker, Git, NuGet, Maven, Gradle, CI/CD, Linux, AWS, Google Cloud, Azure

Education

University of Waterloo   Sept 2023 – Apr 2028
Bachelor of Software Engineering, Term Distinction (GPA: 3.97 / 4.00)   *Waterloo, Ontario*