Trevor J. Yao

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Language and tool agnostic engineer with proven track record of efficiently solving problems. Loves to take on new and exciting challenges, always going above and beyond. Excels at interpersonal communication and time management.

Experience

Autonomic (now Ford Model e) Palo Alto, California, USA (Remote) Jan 2023 - Apr 2023

Software Engineering Intern (Message Connectivity)

- Major contributor to the gateway of the Transport Mobility Cloud (TMC), enabling reliable, real-time IoT connectivity of over 9 million Ford vehicles worldwide.
- Strengthened reliability of team services by implementing new algorithms for MQTT client selection and automated spammy device blocking, improving command delivery success rate to 99.997%.
- Supported and contributed to distributed network of concurrent Java/Kotlin streamed Kafka microservices, processing over 10 billion messages daily, running on Kubernetes clusters hosted on AWS and GCP.

Autonomic (now Ford Model e) Toronto, Ontario, Canada (Remote) May 2022 - Aug 2022

DevOps Tools Engineering Intern

- Provided critical production support of in-house designed CI/CD tools, including GitOps-based Kubernetes controllers and scalable automation pipeline builder.
- Created interpreter for Tekton CI/CD platform, enabling developers to define pipelines concisely, reducing the average pipeline declaration by over 750 lines.
- Assembled go and python CLI tools to automate common requests and maintain CI/CD infrastructure.
- Maintained infrastructure-as-code terraform modules for company infrastructure configurations.

Sun Life Financial Waterloo, Ontario, Canada May 2021 - Aug 2021

Data Engineer Co-op

- Developed custom realtime audio ELT pipeline using concurrent Python microservices, handling over 3 TB/month of data, facilitated via Kafka & S3.
- Optimised preexisting Spark & Sagemaker audio transcription ML models, reducing processing times by 35%.

Projects & Open-Source Contributions

Märklin Train Microkernel Sep 2023 - Dec 2023

Real-time Model Train Control and Collision Avoidance

- Built embedded C microkernel for Raspberry Pi 4 from bare metal, supporting multi-threaded programs, exception and interrupt handling, message passing, and bidirectional multi-line UART communication.
- Developed algorithms for multi-train, destination routing, and gradual speed control with collision avoidance.

smbprotocol Jun 2021

Open-source Python SMBv2/v3 Client

- Solved fatal race condition occurring during SMB socket shutdown.

vm Dec 2020

Lightweight vim-like Text Editor

- vim alternative, supporting all common vim commands, C/C++ syntax highlighting, unlimited undo, nested multipliers and movements, and text searching, written from the ground up only in vanilla C++.

Education

University of Waterloo Waterloo, Ontario, Canada Sep 2019 - Dec 2023

Honours Bachelor of Computer Science Co-op; Minor in Pure Mathematics.

- Graduated early with Dean's Honours; 89% Cumulative Average (4.0 GPA).
- Relevant Courses: CS343 (Concurrent Programming); CS452 (Real-time Systems); CS454 (Distributed Systems).

Skills

Languages: Go • C/C++ • Kotlin • Java • Python • Scala • C# • JS • SQL • Bash
Tools: AWS • GCP • Kubernetes • Docker • JDK • Kafka • Spark
Other: Distributed Systems • Concurrency • Real-Time • IoT • Operating Systems • Embedded Systems