Tony (Wuyue) Sun

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Languages: C++, Python, Java, JavaScript, TypeScript, Golang, C, Kotlin, SQL, C#
Tools/Technologies: React.js, Node.js, Docker, AWS, Microsoft Azure, Flask, MySQL, MongoDB, Jenkins, Spark, Elasticsearch, Hadoop/HDFS/MapReduce, Appium, Cypress, Selenium, WebdriverIO, Storybook.js, Jupyter Notebook, Git, Unix
Certifications: MS AZ-900: Azure Fundamentals, Lean Six Sigma White Belt

EDUCATION

University of Waterloo, *Bachelor of Software Engineering (BSE)* Sep 2020 – Apr 2025
With academic exchange at École Polytechnique Fédérale de Lausanne (EPFL) 2024
3.96 GPA | 2x Dean's Honours List | Mathematics Society of UWaterloo Representative (1A) | President's Research Award
Relevant Coursework: Data Intensive Distributed Systems, Concurrent Programming, Operating Systems, Networking

EXPERIENCE

Compute Engineering Intern, *X (Twitter)* May 2024 – Aug 2024
- Established **ownership** over "Packer", X's global package store infrastructure managing 14 PBs of build artifacts, adding more than 5 feature releases and decreased the measured average latency of the **Java**-based **Finatra backend** by **~99.4%**.
- Engineered an automated garbage collection service running in **Apache Aurora** that manages the identification and multi-tier deletion of stale Packer artifacts in **HDFS**, enabling **savings of 500 thousand to 1 million USD** in storage infrastructure.

Software Engineering Intern, *Verily (Google Life Science)* Jan 2024 – Apr 2024
- Architected component-based **snapshot regression tests** for Verily's **React.js** component library using **Storybook.js, Percy**, and integrated in **CI**, employing 20+ components in over 600 variants based on props, CSS pseudo-states, and automated interactions.

Web Research Intern, *Huawei Canada* May 2023 – Aug 2023
- Architected cross-platform mobile **WebView** benchmarking tool with **WebdriverIO** and **Appium** for use by 20+ developers.
- Implemented **intercepting forward proxy** with **Node.js** to enable customized response caching and 30% reduced test duration.
- Utilized **core web vitals** such as LCP and FID to extract and analyze webpage performance in loads and simulated interactions.
- Produced a 9 page internal report on WebView, Wasm and accessibility, based on select papers in ACM Web Conference '23.

Research Assistant, *University of Waterloo* Jan 2023 – Apr 2023
- Collaborated with Prof. W. Dietl on **Java data properties static analysis** and standardization in the Checker-Framework .

Software Developer Intern, *Trend Micro* Sep 2022 – Dec 2022
- Expanded the coverage of the Deep Security product by 20% in implementing **driver** monitoring and blocking functionalities in **C++** and **Lua** - optimizing for compatibility with **20+ Unix and Windows-based operating systems.**
- Implemented efficient **path matching, wildcard and search algorithms** to improve matching module execution time by 30%.
- Identified and patched high-priority vulnerability allowing for malicious script execution in locked-down **Bash** shell.

Software Developer Intern, *Ontario Digital Service* Jan 2022 – Apr 2022
- Led and pioneered the development of a **microservices**-based localizable web app with **Eleventy**, reaching **1.2 million unique annual visitors** and serving as code proof-of-concept for 20+ future projects [Public Sector Salary Disclosure].
- Constructed an **ETL data pipeline** through **Azure Databricks** to process Ontario's largest production dataset using **PySpark** and deliver to **Elasticsearch** clusters, cutting existing manual processes by 90% and data ingestion time by 80%.

Engineering Lead, *WATOLINK* Sep 2021 – Jul 2022
- Architected the desktop interface for a **SSVEP**-based brain controlled communication application using **PyQt5** with **OpenGL**.
- Practiced technical **agile project management** within team of 8 to enable efficient delivery cycles and exceed deadlines.

PROJECTS

ITrash, *Self-Driving Autonomous Trash Can*
- Constructed a robotic trash can that detects thrown objects and repositions to catch them on **Raspberry Pi** and **Arduino.**
- Enabled low latency data transfer with **serial port** and **python socket** communication between three microcontrollers.
- Devised mathematical model to use current 3D coords to predict target landing position, enabling robot to reach 75% accuracy.

CloudMesh, *Distributed and decentralized MLaaS (in-progress)*
- Enabled distributed computation of predefined workloads through **hybrid P2P** setup of provider and requester peers.
- Explored network hole-punching and built **reverse proxy** based solution to enable direct **C socket** networking within NAT.
- Created customized **File-Transfer-Protocol** based layer to transfer large training data between peers.