Wei-Che Tsai

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"4 YoE in operating system and low latency systems; writes modern C++ and Python"

Work Experience

Software Engineer
06/2021 - 08/2023
Kronos Research (Top 5 High-Frequency Quant Trading Firm in Taiwan)
Taipei, Taiwan

- Developed a new Market Data Processing Pipeline in **modern C++ and Linux programming (epoll, thread)**, which cut **30%** CPU usage and **reduced 20% company expenses** on AWS instances monthly
- Launched a project of **in-house profiling tool using C++ and Python** to effectively **identify and resolve bottlenecks** on the order management system, which achieved a vital **5%** increase in trading volume essential for company revenue
- **Led cross-team cooperation** among trading algo developers and HPC engineers to **tune the network configs on Linux** kernel to **reduce 25% latency** for order transmissions, resulting in improved order fill rate by **5%**
- **Mentored three junior colleagues**, expanding their skill set on C++ STL, network programming, and Linux runtime optimization that **increased team productivity by 15%** more issues resolved per sprint
- Maintained order management system in C++ with **zero-copy, template programming and clang compiler optimization** to achieve low latency trading over in-house RESTful, WebSocket, and FIX protocol libraries
- Became the fastest promoted junior engineer for exceptional **problem-solving skills** and **adaptive learning** of industry trends

Research Assistant
06/2020 - 06/2021
Academia Sinica (National Research Institute)
Taipei, Taiwan

- **Journal Publication (first author)**: Wei-Che Tsai, Wei-Ming Chen, Tei-Wei Kuo, and Pi-Cheng Hsiu, Intermittent-aware Distributed Concurrency Control in *IEEE/ACM CODES+ISSS'22* and in *IEEE Trans. on CAD*, Oct. 2022 [link]
- Fostered research skills via extensive research in **Internet-of-Things, distributed concurrency control, and embedded system**
- Developed the first **distributed operating system for battery-less IoT network** based on FreeRTOS with C/C++, enabling researchers to expedite related studies on TI MSP430 and Cypress PSoC 6 development boards [link]

Software Engineer Intern
07/2019 - 09/2019
Cisco
Taipei, Taiwan

- Added internal test case in **C++ and gtest** and mitigated a bug on 100+ affected clients by delivering critical kernel module patch

Software Engineer Intern
04/2018 - 09/2018
Logitech
Hsinchu, Taiwan

- Developed the universal **build system in CMake** to **reduce 50% of build time** and facilitated development team-wide
- Developed the new portable testing kit using **C++ on Raspberry Pi** to **cut 66% testing time** on gaming mice

Education

Georgia Institute of Technology
08/2023 - Present
M.S. in Computer Science
Atlanta, Georgia

- Selected Courses: Advanced Operating System, Computer Network, Database System Implementation

National Taiwan University
09/2018 - 06/2020
M.S. in Networking and Multimedia, GPA 4.0/4.3
Taipei, Taiwan

- Thesis: Intermittent-aware Distributed Concurrency Control for Self-Powered IoT network

National Chiao-Tung University
09/2013 - 06/2017
B.S. in Computer Science, GPA 3.85/4.3 (Ranking: 6/54)
Hsinchu, Taiwan

- Best idea and product prototype out of 70 teams in 4th Meichu Hackathon (Annual event by the university, 350 participants/year)

Skills

- **Modern C++ 20**: Used in 5+ projects over 8,000 LoC with **clang, gdb, gtest, valgrind, and perf** for efficient development
- **Python**: Used in 3 projects with packages including **pandas, numpy, asyncio, threading, selenium, pytest and matplotlib**
- Profiling and optimization: System-wise: **Linux programming and run-time**; Network-wise: **tcpdump, wireshark, NAPI tuning**