Zibai (Matthew) Wang

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EDUCATION

Cornell University, **Ithaca, New York** Jan 2024 - Dec 2024
Master of Engineering: Computer Science
Highlighted Courses: Blockchain, Parallel Computing, Computer Vision & Graphics, Databases, Operating Systems

University of British Columbia, Vancouver, BC Sep 2019 - May 2023
Bachelor of Science: Computer Science and Mathematics; With Distinction
Highlighted Courses: Object-Oriented Programming, Algorithms, Computer Networks, Applied AI & ML

WORK EXPERIENCES

INTEL Corporation, Vancouver, BC Sep 2021 - April 2022
Software Research & Development Intern

- Developed and implemented ***C***-based optimization settings for quality-speed tradeoffs of low-delay streaming and video compression in the widely-used ***SVT-AV1*** encoder, decreased ~10% bitrate loss and increased ~8% speed.
- Developed test scripts using ***Python*** and ran on ***AWS EC2 Linux*** instances for evaluating bitrate/speed tradeoffs for existing ***SVT-AV1*** features; Collaborated across Agile teams to perform comparative analysis among video encoders in the market.
- Designed and implemented an optimized video decoder program using ***C***. Simplified the 5 decoding levels to a more maintainable 2-level system. Integrated ***CI/CD*** pipelines to automate testing and deployment.
- Implemented unit tests using ***Check framework*** , achieved test coverage of 95%+ and packaged the program using ***CMake***.

Tencent Holdings Ltd, Shenzhen, China July 2019 - Aug 2019
Software Developer Intern

- Built an event-driven notification system using ***Python*** and ***Flask framework*** to keep track of keywords and feedback given by users on stock forums. Created a user subscription interface using ***React***.
- Integrated ***Python*** libraries to collect dynamically generated content data from ***JavaScript***-based stock forums, enabling server-side ***JavaScript*** execution and rendering for comprehensive ***HTML*** access.
- Persisted users post data into ***MySQL*** databases consisting of >5G user data for further analysis and relational database management. Crafted schema and employed strategic indexing on crucial attributes for efficient data retrieval.

PROJECTS

Blockchain-Based Carbon Market Platform - supervised by Prof. Xinlai Liu Aug 2024 - Dec 2024

- Led the full-stack development of a blockchain carbon market platform, deploying chaincode using ***Docker***, with ***Golang*** and ***Node.js*** for backend, and ***TypeScript*** with ***React*** for frontend and ***API*** gateway. Enabling the tracking and trading of carbon credits for climate actions across 50+ entities (corporations, cities, states, etc.).
- Implemented token issuance, transaction, and clearance mechanisms in smart contracts. Simulated over 10,000 carbon credit trades with real data using ***CouchDB***, boosting carbon tracking efficiency by 35% over traditional systems.
- Utilized cutting-edge technologies such as blockchain, Internet of Things (IoT), and digital twins to improve transparency and security, resulting in a 30% reduction in fraudulent carbon credit claims.

High-Performance Computing(HPC) - Fish School Search (FSS) Optimization Jan 2024 - Apr 2024

- Led a team of three to develop a ***C++*** serial implementation, then applied GPU acceleration using ***CUDA***, and optimizing CPU usage with ***OpenMP*** and ***MPI*** in parallel implementations, emulating fish foraging behavior to find optimal solutions.
- Achieved 80% parallel efficiency by leveraging multi-core/thread communication, ***CPU SIMD*** instructions, and sparse linear algebra, significantly reducing computation time from 2 hour to 10 minutes and enhancing scalability when applied to large-scale problems (e.g., parameter optimization in machine learning, resource allocation in computer networks).

Hospital Management System Sep 2019 - Dec 2019

- Designed and implemented a full-stack hospital management system using ***Java***, ***Spring*** framework, and ***MySQL***, applying ***OOP*** principles and the ***Observer pattern*** to improve tracking of patient-doctor appointments and status.
- Utilized the ***Spring RestController*** to build ***Restful APIs*** for patient data retrieval and update. Created ***GUI*** using Java ***Swing Framework*** for user interaction, and employed ***Maven*** for dependency management.

SKILLS

Languages	Java, C++, Python, JavaScript/TypeScript, GoLang, C
DataBase & Cloud	MySQL, MongoDB, Oracle, NoSQL, DynamoDB
Frameworks	PyTorch, TensorFlow, React, Node.js, Cuda, MPI, OpenMP, NumPy, Flask, Spring, Maven
Tools	Linux, Unix, Git, AWS (Cloud Practitioner), Docker