Zibai (Matthew) Wang

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EDUCATION

Cornell University, **Ithaca, New York** Jan 2024 - Dec 2024
Master of Engineering: Computer Science; Flexible in Relocation
Relevant Course: Parallel Computing, Computer Vision, 3D Reconstruction, Computer Networks, Operating Systems

University of British Columbia, Vancouver, BC Sep 2019 - May 2023
Bachelor of Science: Computer Science And Mathematics; With Distinction
Relevant Course: Test-Driven Development, Applied AI & ML, Databases, Data Structures & Algorithms, Object-Oriented Programming, System design, Linear Algebra

SKILLS

Languages	C++, Python, Java, C, C#, JavaScript, TypeScript, Kotlin, PHP, HTML/CSS, Bash
DataBase & Cloud	MySQL, MongoDB, Oracle, NoSQL, DynamoDB
Libraries	PyTorch, TensorFlow, React, Node.js, Cuda, MPI, OpenMP, NumPy, Flask, Spring, Maven
Tools	Git, AWS (Cloud Practitioner), Docker

WORK EXPERIENCES

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

- 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 testing scripts using ***Python*** and ran on ***AWS EC2 Linux*** instances for evaluating bitrate/speed tradeoffs for existing ***SVT-AV1*** features; Collaborated with teams to perform comparative analysis among video encoders in the market using data obtained from tests; addressed performance and stability issues through debugging.
- Designed and implemented an optimized video decoder program using ***C***. Simplified the 5 decoding levels to a more maintainable 2-level system by evaluating the decoder speed against existing solutions in the market.
- Implemented unit tests using ***Check framework*** , achieved test coverage of 95%+ and packaged the program using ***CMake***.

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

- 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***.
- Extracted dynamically generated content from ***JavaScript***-based stock forums by integrating ***Python*** libraries ***Scrapy*** and ***Splash***, enabling server-side ***JavaScript*** execution and rendering for full ***HTML*** access. Utilized dynamic ***IP***s and controlled crawling rate to avoid throttling.
- 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

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 and enhancing scalability when applied to large-scale optimization 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*** to help hospital receptionists to better track patient appointments, health status, and doctor availability, etc.
- 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.
- Applied ***OOP principles*** and ***Observer pattern*** in order to make the connections between the objects of doctors and patients more transparent while avoiding tight coupling between the two objects.