Yuheng Wu
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Personal Website: www.wyyyh.com | LinkedIn: https://www.linkedin.com/in/wyh2ah | GitHub: https://github.com/wyh2ah

Education
New York University, NY, USA   **Sep.2024-May.2026**
Master of Science in Computer Engineering
Relevant Coursework: Computer Architecture (C++, C, RISC-V), Introduction to Java, Database (SQL, Python, Java)

ShanghaiTech University, Shanghai, China   **Sep.2020-Jul. 2024**
Bachelor of Engineering in Computer Science | Major GPA: 3.76
Relevant Coursework: Algorithm and Data Structure (C++), Computer Architecture (C, RISC-V), Database (SQL), Operating Systems, Software Engineering (Matlab App Designer), Probability and Statistics, Digital Circuits, Human-Computer Interaction, Parallel Computing (C++, CUDA), Cryptography (C++, Python)
Honors: ShanghaiTech University 2023 - Outstanding Teaching Assistant (On Operating Systems Course)

Skills and Interests
Programming: C++11/17, C, CUDA C++, Java, Python, SQL, Matlab, Go, RISC-V
Skills: Software Engineering, HPC Optimization, Parallel Computing, Operating Systems, Database
Applications: Git, Vim, Matlab, Latex, Linux Shell, Intel oneAPI Toolkit, Logisim, Spack, Arm Forge, Slurm, Docker, QEMU, Bochs, ZeroMQ, Kubernetes, Selenium, OpenGL, Oracle
Interests: Software Development, Competitive Programming, System Optimization

Projects & Academic Research
Researcher | Simulation and Visualization of Heart Models Based on GPU   **Jan.2024-May.2024**
Using Parallel Computing in CUDA C++ and OpenGL to Simulate Heart Models in Real Time
- ❖ Utilized C++11 to implement a VTK (The Visualization Toolkit) and Json format converter so that real-world patients' heart data can be smoothly run on our heart simulation model and displayed through OpenGL.
- ❖ Implemented some APIs based on ZeroMQ to emulate the stimulation of pacemakers on the heart as well as acquire the 12-lead ECG (Electrocardiogram) signal of the simulated heart to assist doctors in diagnosing illnesses.
- ❖ By using CUDA, the speed of heart simulations can be greatly accelerated, reducing the time required for a cycle of electrical signal propagation from 20 minutes to just 3 seconds, making the simulations real-time and practically valuable.

Researcher | ClouldFlow: Management System for Multi-Node Cloud Computing   **Summer 2023**
Cloud Computing System Development using Kubernetes & Go
- ❖ Conducted an App + MySQL (multi-app deployment) experiment using Kubernetes.
- ❖ Designed and implemented a scheduler in Go for a Cloud Computing platform (CloudFlow); function of the scheduler included process management; manage applications and computing tasks; channel workers and tasks; clean up.
- ❖ The scheduler enables CloudFlow nodes to be optimally scheduled to several physical nodes, ensuring between-nodes communication so that MPI or PyTorch applications can be deployed directly to execution context.

HPC Programmer | ASC (Asia Supercomputer Community) Student Supercomputer Challenge   **Summer 2023**
Awarded First Prize of 10th ASC Student Supercomputer Challenge (Linux, CUDA, High Performance Computing)
- ❖ Deployed a multi-node Linux environment with specific adjustment to node topologies and power distribution across CPU cores and GPUs to achieve performance optimization for applications under 3000 Watts power limit.
- ❖ Ranked 2nd place in DeepMD application optimization sub-segment of the competition; used MPI tuning to match server topologies, profiled computing bottleneck & conducted multi-node (especially multi-GPUs) optimization, significantly reducing the DeepMD application runtime with a 3.5x speed improvement.

HPC Systems (Programmer) | ISC Student Cluster Competition (SCC) in Quantum ESPRESSO   **Spring 2023**
Ranked Top 3 within the HPC System Design and Optimization Challenge (Linux, MPI, High Performance Computing)
- ❖ Used two provided clusters (Intel Xeon Platinum and AMD EPYC CPUs with Nvidia GPUs) to run profile of two inputs over 4 nodes and full PPN; used tools such as ARM Forge, Intel VTune and Intel Trace Analyzer and Collector.
- ❖ Ran scalability tests on 4 nodes, optimized 4-node-run result by tuning MPI version and added bindings according to system architecture in core, cache, socket, etc. in addition to combining MPI with OpenMP (achieved 20x application speed increase on average).

Professional Experience
Software Development Intern | Shanghai Aerospace Yigen Intelligent Technology Co., Ltd   **July.2022-Aug.2022**
Performance Testing using Python & Selenium (Affiliated with China Aerospace Science and Technology Corporation)
- ❖ Responsible for function and performance testing of a production operation management platform (using Python).
- ❖ Conducted automated testing using Selenium scripts to verify system functionality and stability as well as performed load testing using Jmeter to assess system response times and throughput under high load conditions.
- ❖ Configured and deployed test hardware system and execution environment and conducted product test.