Yuchen Tang

University of Michigan graduate

OS developer in Huawei
Solution Developer for Future Data Centers

📞 +86-13817440338
✉ garretttang@outlook.com
✉ twicy@umich.edu
 GitHub Profile
in LinkedIn Profile

EDUCATION

•**University of Michigan-Ann Arbor** *2019-2022*
Bachelor of Science in Engineering, Computer Science

•**Shanghai Jiao Tong University** *2017-2019*
Bachelor of Science, Computer and Electrical Engineering

EXPERIENCE

•**Huawei Technologies Co., Ltd.** *2022.09-present*
Operating System Engineer Hangzhou, China
- Add XRC support and better DCT control to OpenUCX, a communication framework
- Memory node expansion using FPGA-based CXL 1.1 devices for Taishan servers
- Optimize Huawei's tiered memory manager, etmem, tested under various scenarios
- Offer maintenance to user-space packages such as file, sanlock, sqlite

•**Wonders Information Co., Ltd.** *2021.05-2021.08*
Data warehouse maintenance(Internship) Shanghai, China
- Composed a Python script that parses text and updates the results to Apache Hive databases accordingly
- Reinforced the basic concepts of distributed data processing with industry-level deployment of Apache Hadoop

PERSONAL PROJECTS

•**OpenUCX (communication framework) optimization** *2023.10-present*
More QueuePair Options as well as better flow control policies

- Add XRC support in addition to existing RC and UD QP options, in an attempt to reduce NIC SRAM usage and increase system scalability.
- Optimize DCT control so that it better manages its DCI and DCT resources to achieve higher throughput and lower latency.
- Perform testing with OSU micro-benchmark.

•**Memory node expansion using FPGA-based CXL 1.1 devices** *2023.04-present*
Performance loss < 5 % after careful tiered memory management

- Noticed frequent page ping-pong caused by original, coarse-grained access bit checking method.
- Developed a substitute kernel module that listens to fine-grained hardware access counter results.
- Performed a variety of test suites, including redis, mysql, nginx.

•**Tiered Memory System Manager Optimization** *2022.12-2023.04*
Reduce CPU usage by 17% under MySQL TPCC test suite

- The company's tiered memory system, **etmem**, identifies cold and hot memory and migrates them between tiers of memory to best exploit fast memory for performance and slow memory for capacity.
- Replaced CPU consuming and time costly page table scanning with PEBS sampling, which records hardware events instead.
- Explored the effects of different workloads and sampling frequencies on PEBS sampling results.

TECHNICAL SKILLS AND INTERESTS

Languages: C, bash, python, Markdown, LaTeX
Developer Tools: git, gdb, eBPF
Areas of Interest: Memory Disaggregation(CXL, RDMA), Heterogeneous Computing, Distributed Storage Systems

ACHIEVEMENTS

•**Future Star** *2023.05*
Huawei Technologies Co., Ltd

- Awarded for successfully reducing CPU usage of the company's tiered memory system

•**China-US Young Maker Competition, Top 32 in Shanghai** *2018.04 - 2018.06*
A submersible model based on bionics of manta ray

- arduino programming for the demo that demonstrates the hydromechanics of manta ray