Yuetao Chen

+86 18912301696 chenyuetao21s@ict.ac.cn

Education

Institute of Computing Technology, Chinese Academy of Sciences September 2021 – June 2024
Master of Science in Computer Science
- **GPA**: 3.79 / 4.00

Beijing Jiaotong University September 2017 – June 2021
Bachelor of Engineering in Computer Science
- **GPA**: 3.93 / 4.00 **Ranking**: 1 / 54

Lancaster University September 2017 – June 2021
Bachelor of Science in Computer Science
- **GPA**: 3.81 / 4.00 **First class honours**
- 1 year at Bailrigg campus, UK; 3 years at Lancaster University College at Beijing Jiaotong University, China

Experience

Research Intern March 2023 – Present
Microsoft Research Asia *Beijing, China*

Open Source Contributor June 2022 – September 2022
OpenSUSE *Online*

Back-End Development Intern November 2017 – September 2018
Information Center, Beijing Jiaotong University *Beijing, China*

Publications

** indicates the corresponding author.*

[1] Kun Li, Zhichun Li, **Yuetao Chen**, Zixuan Wang, Yiwei Zhang, Liang Yuan, Haipeng Jia, Yunquan Zhang, Ting Cao*, Mao Yan, Gamify Stencil Dwarf on Cloud for Democratizing Scientific Computing, *Submitted to SOSP 2023* (under review) [link]

[2] Lei Liu*, Xinglei Dou, **Yuetao Chen**, Intelligent Resource Scheduling for Co-located Latency-critical Services: A Multi -Model Collaborative Learning Approach, *FAST 2023* [link]

[3] **Yuetao Chen**, Keni Qiu, Li Chen, Haipeng Jia, Yunquan Zhang, Limin Xiao, Lei Liu*, Smart Scheduler: an Adaptive NVM-Aware Thread Scheduling Approach on NUMA Systems, *CCF Transactions on High Performance Computing* [link]

[4] Xinglei Dou, Lei Liu*, **Yuetao Chen**, An Investigation into Quantum Program Mapping on Superconducting Quantum Computers, *Journal of Computer Research and Development* (In Chinese) [link]

Research Projects

Bridging the Gap Between Stencil and Convolution March 2023 – Present
Advisor: Dr. Kun Li | Microsoft Research Asia *Beijing, China*
- Conducted a comparative analysis of stencil and convolution and identified similarities and differences between the two.
- Developed and proposed a new Tensor core algorithm for stencil computing, based on the img2col approach, that leverages Tensor core processing power for single-channel computations.

Stencil Computing on Heterogeneous Platform [1] October 2022 – December 2022
Advisor: Dr. Kun Li | Microsoft Research Asia *Beijing, China*
- It is the first system for high-performance Stencil on heterogeneous CPU+GPU with novel optimizations on both CPU and GPU.
- Implemented a new CPU SIMD register level algorithm for stencil computing, resulting in significant performance improvements of 6.3% - 19.9% on different stencil kernel shapes.
- Replicated the tessellate tiling (SC '17) to be coordinated with SIMD algorithm.
- Designed a data exchange method between CPU and GPU for stencil computation which covers the communication latency by computation.

Mobile Platform Resource Scheduling October 2022 – Present
Advisor: Prof. Lei Liu | Institute of Computing Technology, Chinese Academy of Sciences *Beijing, China*
- It is called MobiRL, a reinforcement learning-based resource scheduler for mobile systems.
- Implemented a resource scheduling framework for Android devices using the Deep Deterministic Policy Gradient (DDPG) model to optimize performance.

- Designed a piecewise reward function that optimizes energy consumption while limiting frame loss rate, ensuring both efficient use of resources and a high-quality user experience.

Intelligent Resource Scheduling for Co-located Services [2] June 2021 – September 2022

Advisor: Prof. Lei Liu | Institute of Computing Technology, Chinese Academy of Sciences *Beijing, China*

- It is called OSML which employs multiple ML models to work collaboratively to predict QoS variations, shepherd the scheduling, and recover from QoS violations in complicated co-location services.
- Divided the DQN model into two parts to prevent incorrect scheduling decisions and ensure the QoS.
- Designed a resource sharing policy, such as shared cacheline, to optimize resource utilization across co-located services.
- Tuned PARTIES (ASPLOS '19) and CLITE (HPCA '20) for the evaluation and collected and annotated program resource allocation data.

NVM-aware thread scheduling approach on NUMA systems [3] September 2021 – May 2022

Advisor: Prof. Lei Liu | Institute of Computing Technology, Chinese Academy of Sciences *Beijing, China*

- It is an NVM-aware thread scheduling approach for NUMA systems with hybrid memory, utilizing the LinUCB algorithm to guide scheduling decisions and reduce program execution time by up to 59.9%..
- Found the significant difference in local and remote access bandwidth between NVM and DRAM led to performance loss for existing schedulers.
- Carefully selected appropriate features and used LinUCB to guide thread scheduling, resulting in improved performance.

Fast Fourier Transforms Library October 2020 – December 2020

Advisor: Prof. Haipeng Jia | Institute of Computing Technology, Chinese Academy of Sciences *Beijing, China*

- Discovered the changing pattern of FFT algorithm with base 2.
- Automatically generated C language codes for FFT algorithm with base 2.

Development Experience

Dynamic Detection of Error Conditions from openQA Test Results June 2022 – September 2022

OpenSUSE [Issue link] [PR link] *Online*

- Communicated with the community and maintainers to refine what they want and evaluate how I did at the time.
- Added new functionality to openQA, enabling the system to search for similar failed test cases.
- Implemented visualization features in openQA to display failed tests and provide an intuitive understanding of common failures and their relationships, enabling more efficient and effective debugging.

WeCom Development November 2017 – September 2018

Information Center, Beijing Jiaotong University *Beijing, China*

- Leveraged Python, Django, and MySQL to implement functionalities in WeCom such as lost and found.

Teaching Assistant and Extracurricular Activity

Teaching Assistant of Linear Algebra March 2020 – July 2020

Beijing Jiaotong University

- Graded homework and answered students' questions.

Deputy Director of the Academic Department of the Student Union September 2022 – September 2023

Institute of Computing Technology, Chinese Academy of Sciences

- Invited professors to give talks and held graduate academic forums.

Technical Skills

Languages: C, Python, CUDA, C++
Tools and Framework: Linux, Git, NSight, CPU intrinsics, Intel CAT, cuDNN, Pytorch/libtorch, cutlass, Django

Awards

E Fund Management Co. Scholarship — Institute of Computing Technology, Chinese Academy of Sciences 2023
Postgraduate Academic Scholarship — University of Chinese Academy of Sciences 2021, 2022
Excellent Bachelor Thesis — Beijing Jiaotong University 2021
Second Class Academic scholarship — Beijing Jiaotong University 2020
First Class Academic scholarship — Beijing Jiaotong University 2018, 2019