Boyu Tian (田博宇)

E-mail: tby20@mails.tsinghua.edu.cn ***Homepage:*** https://criust.github.io ***Telephone:*** +86-15389218086

EDUCATION

Tsinghua University   *Sep. 2020 - Present*

Institute for Interdisciplinary Information Sciences(IIIS)

Ph.D. student in Computer Science, advised by Prof. Mingyu Gao.

Shanghai Jiao Tong University   *Sep. 2016 - Jun. 2020*

ACM Honors Class, Zhiyuan College

B.Eng. in Computer Science, advised by Prof. Chao Li.

RESEARCH INTERESTS

My research interests mainly lie in the fields of efficient memory architectures and scalable data processing. I am currently focusing on memory-centric architecture designs such as near-data processing, memory pooling, and memory disaggregation. I am also interested in memory system optimizations for important workloads, such as deep learning and graph processing.

PUBLICATIONS

Boyu Tian, Qihang Chen, and Mingyu Gao. ABNDP: Co-optimizing Data Access and Load Balance in Near-Data Processing. In ***ASPLOS***, 2023. (**CCF-A**).

Qihang Chen, **Boyu Tian**, and Mingyu Gao. FINGERS: Exploiting Fine-Grained Parallelism in Graph Mining Accelerators. In ***ASPLOS***, 2022. (**CCF-A**).

Bohan Zhao, Xiang Li, **Boyu Tian**, Zhiyu Mei, and Wenfei Wu. DHS: Adaptive Memory Layout Organization of Sketch Slots for Fast and Accurate Data Stream Processing. In ***KDD***, 2021. (**CCF-A**)

EXPERIENCES

IDEAL Lab, IIIS, Tsinghua University   *Sep. 2020 - Present*

Research Assistant, advised by Prof. Mingyu Gao   *Beijing, China*

- We focused on addressing the *Memory Wall* problem and alleviating the memory access bottleneck for data-intensive applications.
- I paid special attention to architectures that follow the Near-Data Processing paradigm. I focused on providing system support and data communication optimization for general-purpose NDP systems.

Alibaba DAMO Academy   *Jun. 2023 - Jan. 2024*

Research intern in Computing Technology Lab. Mentor: Dr. Dimin Niu   *Beijing, China*

- We focused on the design and development of memory pooling based on Compute Express Link (CXL) technology. Our work is presently being submitted to the industry track of leading conferences in the field of computer architecture.
- I was in charge of a research project focusing on the design of a rack-level CXL-based memory pool that is scalable and applicable to multiple heterogeneous computing devices.

SAIL Lab, Shanghai Jiao Tong University   *Jul. 2018 - Jun. 2020*

Research Intern, advised by Prof. Chao Li   *Shanghai, China*

- We explored the idea of approximate graph computing. I developed a system to control approximation level of graph algorithms according to user-defined QoS requirements.
- I proposed a graph representation of both hardware resources in the cloud and inter-dependent microservice-based applications. I also designed an efficient microservice deployment scheme using sub-graph matching algorithms and a runtime resource adjustment scheme based on the graph abstraction.

Turing Department, Huawei Hisilicon   *Oct. 2019 - Dec. 2019*

Research Intern, supervised by Dr. Heng Liao and Dr. Lin Li   *Shanghai, China*

- I developed algorithms for 3D view synthesis from sparse input images. I modified the rendering path generation of existing synthesis systems to adapt it for light field rendering in the 3D scenario.

CEI Lab, Duke University   *Jul. 2019 - Sep. 2019*

Research Intern, advised by Prof. Yiran Chen   *North Carolina, U.S.*

- I explored the idea of accelerating graph processing workloads using ReRAM-based Processing-in-Memory paradigm.

HONORS AND AWARDS

ASPLOS 2023 Student Travel Award	2023
Comprehensive Excellence Scholarship of Tsinghua University	2021, 2022, 2023
Tang Lixin Scholarship	2018-2020
Outstanding Leader Scholarship of Zhiyuan College	2017
Zhiyuan Honorary Scholarship	2016-2019

TEACHING

Teaching Assistant   *20470084 Computer Architecture*

Spring 2021, Spring 2022   *Tsinghua University*

- I worked as the teaching assistant of Computer Architecture taught by Prof. Mingyu Gao, targeting undergraduate students in Yao Class and Artificial Intelligence Class in IIIS. I designed and developed the course project, which is a computer architecture simulator for RISC-V.

Teaching Assistant   *C++ Programming*

Fall 2017   *Shanghai Jiao Tong University*

- I worked as the teaching assistant of C++ Programming taught by Prof. Huiyu Weng for students in ACM Class. I designed exam questions and algorithmic programming exercises.

TECHNICAL SKILLS

Programming Languages	C, C++, Python, Verilog, Java, Rust, Go
Hardware Simulation/Analysis	ZSim, Intel Pin, CACTI, Ripes