

# Tongzhou Gu

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## Education

### King Abdullah University of Science and Technology (KAUST)

*M.S./Ph.D. Program in Computer Science*

Sep. 2022 – Present

Jeddah, Saudi Arabia

- **Advisor:** Prof. Marco Canini

### Southern University of Science and Technology (SUSTech)

*Bachelor in Computer Science and Engineering*

Sep. 2018 – Jun. 2022

Shenzhen, China

- **Overall GPA:** 3.59/4.0
- **Advisor:** Prof. Zhuozhao Li

## Research Interests

### High-Performance Networking and Computing, Embedded Systems, ML Systems

- Currently I am interested in accelerating large-scale ML training with comprehensive approaches including hardware offloading (GPU / Networks / FPGA), compiler-based optimization, and topology-aware scheduling.

## Internship Experience

### SANDS Lab, King Abdullah University of Science and Technology

*Research Intern*

Jan. 2022 – Jun. 2022

Remote

- Develop a novel AllReduce library running at line rate (100Gbps) with SmartNIC offloading and sparse collective communication to accelerate large-scale machine learning.
- **Advisor:** Prof. Marco Canini

### Amazon Web Services Shanghai AI Lab

*Software Development Engineer Intern*

Jul. 2021 – Jun. 2022

Mixed (Shanghai, China / Remote)

- Design and implement distributed sharding system on a next-generation deep learning framework based on TVM Machine Learning Compiler with MXNet Team members

## Selected Honor & Awards

### Highest Linpack Benchmark Winner

*Team Captain, SC21 Student Cluster Competition*

Nov. 2021

Remote

- Awarded by Association for Computing Machinery and IEEE Computer Society

### First Prize

*Team Member, ASC20-21 Student Supercomputer Challenge*

May. 2021

Shenzhen, China

- Awarded by Asia Supercomputer Community

### First Place, AI Special Prize

*Team Member, 2021 APAC HPC-AI Competition*

Nov. 2021

Remote

- Awarded by HPC-AI Advisory Council and National Supercomputing Centre (NSCC) Singapore

### Outstanding Graduate

May. 2022

- Awarded by Department of Computer Science and Engineering, SUSTech

## Other Experience

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### Student Advisor<sup>1</sup>

- ISC 2022 Student Cluster Competition, **Online 3rd Place**
- ASC22 Student Supercomputer Challenge, **1st Prize**
- SC22 IndySCC Competition, **2nd Place**

### Participant

- National University of Singapore School of Computing Summer Workshop 2019
- OpenACC GPU Application Hackathon 2019 (Team Member)
- ASC19 Student Supercomputer Challenge, **2nd Prize** (Team Captain)
- 2020 APAC HPC-AI Competition, **3rd Place** (Team Member)
- SC20 Student Cluster Competition (Team Member)
- 2022 APAC RDMA Programming Competition, **3rd Prize** (Team Captain)
- KAUST-NVIDIA GPU Hackathon 2022, **Special Mention** (Team Captain)

### Teaching Assistant

Jan. 2021 – Jun. 2021

- Assist in teaching Course CS328: Distributed Systems and Cloud Computing
- Sponsored by Prof. Georgios Theodoropoulos, SUSTech

### Student Assistant

Jul. 2020 – Jan. 2021

- Assist in managing SUSTech Supercomputing Club and SUSTech Supercomputing Team
- Sponsored by Center for Computational Science and Engineering, SUSTech

### Peer Tutor

Oct. 2019 – Dec. 2019

- Provide weekly extracurricular tutorials for Course CS110: Introduction to Java Programming
- Sponsored by Learning Center, SUSTech

## Selected Projects

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### Performance interference study of co-located containers

Sep. 2021 – Jan. 2022

- Discover the performance interference caused by multiple containers running on the same physical machine with Performance Monitor Unit (PMU)
- **Advisor:** Prof. Zhuozhao Li, **Course:** CS413 Group Projects III, SUSTech

### MALLOC: Memory Allocation Leakage Live Observer and Capturer

May. 2021

- Build a monitor to identify unused allocated memory space and potential memory leak in runtime through exploiting Memory Allocation Library, Memory Page-Level Protection, and Runtime Interposition.
- **Course:** CS302 Operating System, SUSTech

## Skills

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**Spoken Languages :** English (Working Language), Mandarin Chinese (Native)

**Programming Languages :** Modern C/C++, Python, Go

**Frameworks :** Verbs, TVM, CUDA, MPI, OpenMP

**Others :** Linux Server Operations and Maintenance

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<sup>1</sup>Providing training and technical support for junior members.

<sup>2</sup>Last updated on January 30, 2023.