

HAOYANG SHI

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Home: luke-skycrawler.github.io

EDUCATION

Zhejiang University

B.S. in Computer Science

- GPA: 3.79/4.00 (85.7/100)

Hangzhou, China

Sep 2018 – Present

RESEARCH EXPERIENCE

Zhejiang University (State Key Lab of Computer Assisted Design & Computer Graphics)

Research Assistant advised by Professor Weiwei Xu

Hangzhou, China

Mar 2021 – Present

Auto quantization in taichi compiler for physical simulations

- Proposed to utilize the propagation of error formulae for estimation of the round-off error and calculate the required bits for a given simulation.
- Identified dithering as an efficient method of error control.
- Learned the implementation and math details for Material Point Method and Finite Element Method.
- Participated in an ongoing effort to merge the feature into the taichi compiler.
- Manuscript in preparation for SIGGRAPH 2022 as joint first author.

Zhejiang University (Laboratory of Cyber Science and Technology)

Team member of ZJU representative for National Computer System Capability Challenge

Hangzhou, China

Apr 2021 – Aug 2021

AMipsel: an advanced mipsel processor

- A robust, configurable self-designed pipelining superscalar MIPS little-endian processor.
- Scored a 83.7x performance surplus over the baseline (highest in the contest history).
- Full-on operating system support including TLB and hardware interrupts; Booted successfully with the adapted operating system provided by the contest.
- Fully responsible for the design, testing, integration and quantified optimization of the cache system. Deeply engaged in backend implementation and the QEMU differential test framework.

Zhejiang University (Intelligent Computing and System Lab)

Undergraduate Student Research Training group member

Hangzhou, China

Sep 2020 – May 2021

Enchecap: An enclave-based heterogeneous calculation protocol based on Nvidia CUDA and Intel Secure Guard Extension (<https://github.com/vtu81/Enchecap>)

- Studied and examined the security fundaments of Intel SGX and relevant hardware protection researches on GPUs;
- Designed a heterogeneous calculation protocol between the host TEE and protected device.
- Responsible for the GPU side of the project: RSA cryptosystem implementation in CUDA and its integration into the heterogeneous system.

SELECTED AWARDS AND HONORS

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| First Prize (rank 2/121) in National Computer System Capability Challenge | 2021 |
| First Prize in the Chinese Mathematics Competitions (Provincial) | 2019 |
| First Prize in Chinese Physics Olympiad (Provincial) | 2017 |

ADDITIONAL INFORMATION

Additional Professional and Extracurricular Experiences

- Member, Soccer School Team of CKC college (Sep. 2018-Present), won the 7th place out of 32 teams in school soccer championship 2020; scored 2 goals in all tournaments.
- Copiloted a social service to promote first-aid measures in practice (Guangzhou, Aug 2020); repertoire includes Heimlich Maneuver, CPR on dummies and AED guide;
- Interests: Soccer, Chess, Cycling, Swimming

Computer and Language Skills

- Programming: Python, C/C++, CUDA, Javascript, scala
- Languages mastered: English(fluent), Chinese(native), Cantonese(fluent)
- TOEFL iBT MyBest superscore: 105/120 (Reading 30/30, Listening 30/30, Speaking 20/30, Writing 25/30)
- GRE: 325/340 (Verbal 155/170, Quantitative 170/170, Analytical Writing 3.0/6)