

TINGHAO XIE

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🎓 EDUCATION

Zhejiang University (ZJU), Hangzhou, Zhejiang, China

09/2018 – Present

B.E. in Computer Science and Technology (CS), expected July 2022

- **GPA:** 3.99/4.00 (91.88/100; top 1%)

👤 EXPERIENCE

Project: SGX Security Protection Technology of Distributed Machine Learning under GPU Architecture

04/2020 – Present

Undergraduate Intern in **Intelligent Computing and System Lab, Zhejiang University, China**

Advisor: *Prof. Jianhai Chen, Lec. Rui Shen*

- Studied heterogeneous calculation and conducted research about secure system schemes involving TEE
- Summarized protections with Intel SGX and secure issues around GPU
- Designed 🌐**Enchecap**: an **encrypted (enclave-based) heterogeneous calculation protocol** based on Nvidia CUDA and Intel SGX, with *Haoyang Shi* and *Zihang Li*
- Implementing the protocol under different scenes including machine learning

Project: The QuEST Challenge

02/2020 – 03/2020

Member in **SuperComputing Team, Zhejiang University, China**

An optimization task on QuEST, an open source, hybrid multithreaded and distributed, GPU accelerated simulator of universal quantum circuits in ASC Student Supercomputer Challenge 2020-2021.

- Profiled QuEST's algorithm and provided insights into the source code
- Analyzed QuEST's performance and hotspots with different versions of parallelism and optimized QuEST on GPU by 4.7%
- Working on further optimizations including continuous memory accesses and multi-GPU acceleration

</> OTHER SELECTED PROJECTS

Tron: A 3D Grpahic Engine Based on WebGL

12/2020 – 01/2021

A 3D engine based on native WebGL with a wonderful flying game demo, available 🌐[here](#).

- Designed the representation pattern and data structures for 3D scenes
- Completed voxel, material and texture expression modules
- Wrote GLSL shader codes involving fogs and the animated sky
- Implemented cross-platform interaction and front-end web pages

HWMS: A Homework Management System

07/2020 – 08/2020

An individual project for homework management with command-line-based graphic interface, supporting identities including the administrator, teacher and student, available 🌐[here](#).

- Designed the relation diagrams and managed the data with MySQL
- Implemented the management system with pure *Bash Shell*

A MIPS CPU on FPGA

03/2020 – 08/2020

An SoC on Xilinx FPGA and a pixel game in MIPS assembly.

- Designed the datapath and controller circuits of a simplified MIPS CPU
- Built the MIPS CPU and some related modules on FPGA with *Verilog*
- Developed and ran a VGA game in MIPS assembly language on the CPU

MiniSQL: A Single-user Database Management System (SQL Engine) 06/2020 – 07/2020

A simple database management system supporting SQL-like commands and scripts, available [📄here](#).

- Designed the overall organization including interpreter, catalog manager, index manager, record manager and buffer manager modules and connected modules with the API layer
- Implemented index manager and buffer manager modules

Research on the Texture Packing Problem 05/2020

A group research project focusing on approximation algorithms solving the texture(strip) packing problem, a 2D version of the bin packing problem, report available [📄here](#).

- Conducted research on different texture(strip) packing algorithms
- Combined the genetic algorithm with traditional approximation algorithms
- Analyzed performance of various algorithm combinations

CAMPUS ACTIVITIES

Member, SuperComputing Team (ZJUSCT) 09/2019 – Present

- Studying and practicing with high-performance computing
- Obtained the certificate of competency of Accelerated computing basics – CUDA C/C++ from Nvidia Deep Learning Institute on 07/14/2019
- Participated in ASC Student Supercomputer Challenge 2020-2021

Member, DFM Street Dance Crew 03/2019 – 09/2019

- Attended the Danqing Dance Competition 2019, as one of the Hiphop dancers
- Attended the Zhejiang University New Year's Eve Showcase 2020, as one of the Hiphop dancers

Member, Summer Social Practice Group 06/2019 – 09/2019

- Recorded the social practice in Guangzhou and produced a short documentary

HONORS AND AWARDS

The 2nd Class Prize in ASC20-21 Student Supercomputer Challenge Preliminary Contest	01/2021
Narada Scholarship (1/372)	2019 – 2020
Scholarship of Zhejiang University (top 15%)	2019 & 2020
Outstanding Academic Model (top 15%)	2019 & 2020

SKILLS

- **Programming:** C/C++, JavaScript, CUDA, Verilog, Shell, Python, MATLAB, ActionScript
- **Software:** LaTeX, Vivado, Adobe Photoshop, Adobe Premiere Pro, Adobe After Effects, Adobe Audition
- **Languages known:** English(fluent), Chinese(native), Cantonese(native)
- **TOEFL iBT:** Total 110/120, Reading 29/30, Listening 30/30, Speaking 26/30, Writing 25/30
- **Hobbies:** Choreography, Street Dance, Basketball, Fitness