

# TINGHAO XIE

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## 🎓 EDUCATION

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**Zhejiang University (ZJU)**, Hangzhou, Zhejiang, China

09/2018 – Present

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

- GPA: 4.00/4.00 (92.11/100; top 1%)

## 👤 EXPERIENCES

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

04/2020 – Present

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

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

- Studied heterogeneous calculation structures
- Conducted research about secure system schemes involving TEE
- Summarized protections with Intel SGX and secure issues around GPU
- Designed a secure CUDA memory copy function based on Intel SGX
- Implementing SGX into the memory copy function under machine learning situations with RSA encryption

**Project:** The QuEST Challenge

02/2020 – 03/2020

*Member* **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 source code
- Analyzed QuEST's performance and hotspots with different versions of parallelism
- Optimized QuEST on GPU by 4.7%
- Implementing further optimizations including continuous memory accesses and multi-GPU acceleration

## </> SELECTED PROJECTS

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**Tron: A 3D Graphic Engine Based on WebGL**

12/2020 – 01/2021

A group project in Computer Graphics course, including a simple but fully-featured 3D engine based on native WebGL and a wonderful flying game demo, available at 🌐 <http://code.vtu.life/Tron/index.html>.

- Designed the organization and structure of 3D scenes
- Completed voxel, material and texture expression modules
- Wrote GLSL shader codes involving fogs and 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 in Linux Program Design course with command-line-based graphic interface, supporting identities including the administrator, teacher and student, available at

🌐 <https://github.com/vtu81/HWMS>.

- Designed the relation diagrams
- Implemented the HWMS with pure *Bash Shell*
- Enhanced data management with MySQL

**A MIPS CPU on FPGA**


03/2020 – 08/2020

The final project and regular labs in Computer Organization course, including a SoC on Xilinx FPGA and a pixel game in MIPS.

- Designed the datapath and controller circuits of a simple MIPS CPU

- Built the CPU and some related modules on FPGA with *Verilog*
- Ran a VGA game in assembly language on the CPU


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

A group project in Database Systems course, supporting SQL-like database management commands and scripts, available at  <https://github.com/vtu81/MiniSQL>.

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

### **Research on the Texture Packing Problem** 05/2020

A group project in Advanced Data Structure & Algorithm course, focusing on approximation algorithms solving the texture(strip) packing problem, a 2D version of the bin packing problem, report available at

 [http://vtu.life/files/Texture\\_Packing.pdf](http://vtu.life/files/Texture_Packing.pdf).

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

## **CAMPUS ACTIVITIES**

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

- Studying 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

- Produced a short documentary of the social practice
- Recorded the social practice in Guangzhou with pictures and videos

## **HONORS AND AWARDS**

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The Second Class Prize in ASC20-21 Student Supercomputer Challenge Preliminary Contest	01/2021
Narada Second Class Scholarship (1/372)	2019 – 2020
Narada Third Class Scholarship	2018 – 2019
Zhejiang University Third Class Scholarship	2019 & 2020
Outstanding Academic Model	2019 & 2020

## **SKILLS**

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- **Programming:** C/C++, JavaScript, CUDA, Verilog, Shell, Python, ActionScript
- **Software:** LaTeX, Vivado/ISE, Adobe Photoshop, Adobe Premiere Pro, Adobe After Effects, Adobe Audition
- **Hobbies:** Choreography, Street Dance, Basketball, Fitness

## **LANGUAGES**

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- **Languages known:** English(fluent), Chinese(native), Cantonese(native)
- **TOEFL iBT:** Total 105/120, Reading 29/30, Listening 26/30, Speaking 23/30, Writing 27/30

Latest update date: 02/07/2021