# Tinghao Xie

vtu@zju.edu.cn · http://vtu.life/ · (+86) 159-144-54492

## Education

**Zhejiang University (ZJU)**, 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%)

**University of Oxford**, Oxford, United Kingdom (will start from) 10/2021 – 07/2022

*Visiting Student*, Computer Science

## Experience

**Enchecap: An Encrypted (Enclave-based) Heterogeneous Calculation Protocol based on Nvidia CUDA and Intel SGX** 04/2020 – 05/2021

*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 and implemented the protocol into a library and a demo, available **here**

**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%

## </> Other Selected Projects

**RCC: A Remarkable/Retarded C-like Compiler** 05/2021 – 06/2021

A complier built with FLEX and BISON for the frontend, LLVM for the backend, available **here**.

- Modified standard C EBNF and built up the frontend
- Completed the abstract syntax tree for code generation
- Implemented the intermediate code generation features including type binding, structure and array support

**Tron: A 3D Graphic 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 – 02/2021

- Studied and practiced 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

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| 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, Python, CUDA, Verilog, Shell, MATLAB, ActionScript, HTML
- **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
- **GRE General Test**: Verbal 154/170, Quantitative 170/170, Analytical Writing 3.5/6
- **Hobbies**: Choreography, Street Dance, Basketball, Fitness