Huizhe Su

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Education

ShanghaiTech University, Shanghai, China 2020 – Present

B.S. in Computer Science and Technology (CS), expected July 2024

Teaching Assistant Experience

CS110 Computer Architechture Feb. 2023 – Present

Teaching assistant Course Lecturers: Chundong Wang, Siting Liu

Main works:

- Hold labs for students weekly.
- Give presentation on *Control Logic and FSM*.
- Create midterm questions on *control logic*.

CS101 Algorithms and Data Structures Sep. 2021 – Jan. 2022

Teaching assistant Course Lecturers: Dengji Zhao, Hao Geng

Main works:

- Create homeworks and examination problems on *Hash Table* and *NPC problem*
- Grade student assignments.
- Hold recitations for students weekly.

GEHA1149 Mathematical Logic Sep. 2021 – Jan. 2022

Teaching assistant Course Lecturer: Xudong Hao

Main works:

- Grade student assignments.

CS100 Introduction to Programming Feb. 2021 – Jun. 2022

Outstanding Teaching Assistant Course Lecturers: Lan Xu, Laurent Kneip

Main works:

- Carry out tutorials and review sessions on *C and C++*.

Course Projects

Athernet Sep. 2022 – Jan. 2023

Co-developer Course: CS120 Computer Networks. Grade: A+

Brief description: Athernet is a user-space TCP/IP stack with full functionality and handy utilities built on the acoustic channel. This project was developed purely in the Rust language. I worked on this project with my dearly beloved, Cheng Peng.
In this project:

- Two different modulation schemes(BPSK and OFDM, 4B5B and NRZI) was implemented.
- An IP server was implemented for user-level IP protocol.
- An Athernet NAT server was also implemented.
- We have implemented three main protocol: UDP, TCP and ICMP.
- On application layer, a FTP client and Athernet proxy was implemented.
- The network stack is compatible with the existing world wide web.

PintOS Sep. 2022 – Jan. 2023

Co-developer Course: CS130 Operating Systems I. Grade A+

Brief description: PintOS is a toy operating system designed by Stanford University. Students are required to implement additional functionality for PintOS and enhance the existing ones. Cheng Peng and I successfully together finished all the tasks in PintOS.

A new VR Locomotion Method: Ninja Run Sep. 2022 – Dec. 2023

Main developer and designer Course: ARTS1423 Interactive Product Design. Grade: A+

Brief description: A new locomotion method that simulates the running movements of Japanese Ninja in an attempt to reduce motion sickness. This project was designed togather with NT^3.
In this project, I was responsible for:

- Unity and OpenXR development.
- Main UI design (using Figma).
- Depoloyment on Oculus Quest.
- User experience test design.

Gaussian Blur Optimization Feb. 2022 – Jun. 2022

Co-developer and analyzer Course: CS110 Computer Architechture I. Grade: A+

Brief description: We have optimized an existing Gaussian Blur implementation. Our version was ranked second by speed among all the students in the final competition. I worked on this project with my dearly beloved, Cheng Peng.
In this project, I was responsible for:

- Analyze the program performance using VTune.
- Implement thread level parallelism using OpenMP.
- Implement data level parallelism using AVX Intrinsics.
- Optimize cache access by blocking and loop unwinding.

Alzheimer: A third-person puzzle game Sep. 2021 – Jan. 2022

Main developer Course: ARTS1303 Unity Game Development. Grade: A

Brief description: Alzheimer is an artistic puzzle game about a woman who was diagnosed with Alzheimer struggled to find a cure. The game uses metaphoric techniques to demonstrate her fighting against the fear, strangeness and confusion in her mind. This game was powered by Unity Engine. I made this game with Yutao Ming, the art designer, and Kaitian Chao, the game level designer.
In this project, I was responsible for

- Main game programming, including game mechanics programming, UI programming, character control and camera control.
- Create design tools for the game lavel designer.
- Game version control.
- Test and play the game.

In addition to this project, three other individual games were completed in the course:

- A third-person shooting game where palyer has to plant trees while fighting off dangerous ghosts.
- A third person puzzle game that mimics the mechanics of the famous game FEZ and uses perspective shifting to solve puzzles.
- *Thieves by the Sea*, a third person stealth game used to demonstrate Unity's animation and blend features.

Honors and Awards

Outstanding Teaching Assistant - ShanghaiTech University Jun. 2022

Skills

Programming Language

- C/C++, familiar with modern c++.
- Rust, intermediate.

- Python, intermediate.
- C# in Unity Engine.
- JavaScript.
- HTML/CSS.

Natural Language

- Chinese(native speaker).
- English(TOEFL 103).
- Japanese.
- German.

Other skills

- Git.
- LaTeX

Reasearch Interests

While I am actively exploring different research areas, I have a particular interest in **formal verification** and **programming language theory**. Although I do not have prior work experience in these areas, I am eager to learn and participate in research projects. I also plan to take more relevant courses to develop a strong foundation in these fields.

Other Interests

- Playing zachlike games and other challenging puzzle games.
- Philosophy(logics, epistemology and metaphysics).

Relavent Courses

- Theory of computation
- Mathematical Logic
- Operating Systems I
- Computer Architecture I
- Software Engineering (in progress)