# Huizhe Su

✉ suhzh@shanghaitech.edu.cn · 📱 (+86) 188 1751 2853

## 🎓 Education

**ShanghaiTech University**, Shanghai, China                    2020 – Present
*B.E.* 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 homework 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 the user-level IP protocol.
- An Athernet NAT server was also implemented.
- We have implemented three main protocols: UDP, TCP, and ICMP.
- On the application layer, an FTP client and an Athernet proxy were 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 a Japanese Ninja in an attempt to reduce motion sickness. This project was designed together with $NT^3$.
In this project, I was responsible for

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

### Gaussian Blur Optimization
Feb. 2022 – Jun. 2022

*Co-developer and analyzer* Course: CS110 Computer Architecture 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

- Analyzing the program performance using VTune.
- Implementing thread-level parallelism using OpenMP.
- Implementing data level parallelism using AVX Intrinsics.
- Optimizing 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's 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 level designer.
In this project, I was responsible for

- Main game programming, including game mechanics programming, UI programming, character control, and camera control.
- Creating design tools for the level designer.
- Game version control.
- Game testing.

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

- A third-person shooting game where the player 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).

## 📖 Relevant Courses

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