

# Jixuan Ruan

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## EDUCATION

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**University of Science and Technology of China(USTC)**

Sep 2020 – Present

*School of the Gifted Young, Senior Year*

*Huaxia Computer Science and Technology Talent Class*

## ACADEMIC PERFORMANCE

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**Toefl:** 104 (r 28, l 29, s 24, w 23)

**Overall GPA:** 3.77 / 4.30 (Top 15%)

**Core Course GPA:** 3.92 / 4.30

**Operating Systems (H): 97; Computer Networks: 97; Computer Programming A: 96;**

**Network System Experiment: 95; Quantum Computing and Machine Learning: 93;**

**Principles and Techniques of Compiler(H): 92; Introduction to Information Security: 92;**

**Foundations of Algorithms: 92; Design and Practice of Robot: 93; Graph Theory: 90;**

**C Language Programming II: 93; Analog and Digital Circuits: 90;**

**Thermotics: 99; Mechanics A: 90;**

## RESEARCH EXPERIENCE

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### **Photonic Quantum Compiler Optimization**

University of California, San Diego

*Under the Supervisor of Prof. Yufei Ding*

*Jun 2023 – Present, Internship*

We are building a compiler-centric optimization framework for photonic quantum computing. This compiler is capable of deploying quantum programs onto the hardware based on photonic quantum devices. My work is to optimize the performance of a basic framework proposed by Picasso Lab, OneQ: A Compilation Framework for Photonic One-Way Quantum Computation, from the perspectives of algorithms, diversity in resource states, and physical realism.

My work could be checked on <https://github.com/Scarlett0815/OneQ-Optimization>.

### **Build a VR Office system based on Oculus**

University of Science and Technology of China

*Under the Supervisor of Prof. Kai Xing*

*Jul 2022 – Aug 2022, Part-time*

I took part in a small group consisted of several students interested in VR to build a office system based on Oculus. In this office system, we added the gesture recognition to Oculus and freed customers from the handlers. In addition, we realized 3 basic functions, which are 3D Object Importing, Remote Control as well as Model Plane.

Our work could be seen on <https://github.com/OSH-2022/VR-fancy-office>.

### **USTC Robo Game**

University of Science and Technology of China

*Under the Supervisor of Prof. Yuhu Li*

*May 2022 – Nov 2022, Part-time*

We have made a curling robot in 6 months, during which I was responsible for the recognition part as well as the tracking part. In this process, I used neural network to realized our recognition part for better robustness.

Our work could be seen on <https://github.com/WuTianming/robogame-code>.

### **SysYF Compiler Design**

University of Science and Technology of China

*Under the Supervisor of Prof. Yu Zhang*

*Dec 2022– Jan 2023, Coursework*

I made a compiler based on LLVM architecture. I designed this compiler from the lexical level to the final back end.

Also, I optimized the register allocation part using graph coloring methods.

My work could be checked on [https://github.com/Scarlett0815/compile/tree/master/compile\\_llvm/](https://github.com/Scarlett0815/compile/tree/master/compile_llvm/).

### **Attack under Split Learning Architecture**

University of Science and Technology of China

*Under the Supervisor of Prof. Xiangyang Li*

*Aug 2022– Nov 2022, Part-time*

We attempted to perform the classical attack methods on the split learning architecture and compare its influence with the one under the federated learning architecture. Later, we came up with methods to strengthen the attacking results.

## HONORS AND AWARDS

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Huaxia Computer Science Talent Class Scholarship	Dec 2022
Outstanding Student Scholarship Gold Award	Nov 2022
The Second Prize in USTC RoboGame	Nov 2022
Special Award for Girls in USTC Programming Competition(div1)	Apr 2022
The Second Prize of the Undergraduate Mathematics Contest	Dec 2021
China Collegiate Programming Contests for Girls Bronze Award	Nov 2021
Outstanding Student Scholarship Bronze Award	Sep 2021
Rose Light Scholarship	Jul 2021
Freshman third-class scholarship	Dec 2020

## SKILLS

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**Programming:** C / C++, Python, Verilog, Java, Pascal, Basic, C#

**Libraries:** OpenCV, PyTorch, TensorFlow, Mxnet, NumPy, Pandas, Matplotlib

**Languages:** Chinese, English

## TEACHING EXPERIENCE

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**Computer Programming A**

University of Science and Technology of China

*Organized by Prof.Jie Shen*

*2023 Fall*

Topic: C Programming, Introduction to Basic Data Structure, Foundation of Basic Algorithms

## RESEARCH INTEREST

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**Quantum Computing, Programming Language**

**Operating Systems, Computer Architecture, Security**

## EXTRACURRICULAR ACTIVITIES

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**Core Member in the Alumni Liaison Group of the Computer Science Department**

**Member of Debate Team of School of the Gifted Young**

**Commissary in Charge of General Affairs**

## PERSONAL HOBBIES

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**Sketching; Calligraphy; Piano; Novel Writing; Mountain Climbing**

**Notation:** Some of my work could be checked on my personal website <https://scarlett0815.github.io/>