

EDUCATION	School of Computer Science, Nanjing University <i>Bachelor of Science in Computer Science and Technology</i>	Nanjing, China Sept.2021– Jun.2025(<i>expected</i>)
ADVANCED COMPUTER SCIENCE COURSES	Elements of Cryptography <i>90/100 instructor: Prof. Yuan Zhang</i> Combinatorics <i>86/100 instructor: Prof. Yitong Yin</i> Computational Complexity <i>91/100 instructor: Prof. Penghui Yao</i>	fall 2023 spring 2024 spring 2024
	<ul style="list-style-type: none"> The final assessment for this course is a essay about a frontier paper. My essay can be found on my Homepage 	
	Mathematical Logic (I) <i>87.5/100 Instructor: Prof. Liang Yu</i>	Fall 2024
	<ul style="list-style-type: none"> The course covers basic recursion theory, basic model theory (up to Skolem theorems), basic axiomatic set theory (up to Cumulative Hierarchy), and Gödel Incompleteness Theorem. 	
RESEARCH EXPERIENCES	Research on Strong Subadditivity of Quantum Information <i>supervisor: Prof. Penghui Yao</i>	fall 2023- (<i>in progress</i>)
	<ul style="list-style-type: none"> Analyze Lieb's proof and Lin et al.[1]'s proof of quantum strong subadditivity. Compare the similarities and differences between these proof approaches. Explore the properties of the quantum Markov state obtained when equality holds in the new inequality given by Lin et al. Give characteristic of the quantum state when equality holds in the new inequality given by Lin et al. A research defense held by the NJU theory group 	
	Research on Chaitin's Constant <i>Supervisor: Prof. Liang Yu</i>	Spring 2025 - (<i>in progress</i>)
	<ul style="list-style-type: none"> Study the recent research results and applications of Chaitin's constant. 	
SEMINAR	Quantum Cryptography <i>Organizer: Prof. Penghui Yao</i>	Spring 2024
	Set Theory <i>Organizer: Yichen Nie</i>	Spring 2025
	Kolmogorov Complexity <i>Organizer: Yichen Nie</i>	Spring 2025
	<ul style="list-style-type: none"> We are following the book <i>An Introduction to Kolmogorov Complexity and Its Applications Fourth Edition</i> by Ming Li and Paul Vitányi, the records can be found on my Homepage 	

PROJECTS
EXPERIENCES

C language implementation of a full system simulator for CISC

Introduction to Computer Systems, Independent project

fall 2022

- Implementing the various modules of a CISC system in C, including the ALU, i386 instruction set, cache, and I/O.
- Develop generic instruction decoding and addressing functions to handle a large number of instructions efficiently. By leveraging these generic functions, I implement the decoding and addressing of a vast array of instructions through function calls, ensuring consistency and reducing redundancy in the code.
- Utilizing inline functions and parameters to create the execution module.

Implementing an operating system in C

Operating Systems, Independent project

fall 2023

- Implementing part of an operating system in C, including modules for BIOS, process switching, and process synchronization.
- Create P and V operations for semaphores, using these operations to control access to critical sections. Addressed the dining philosophers problem, ensuring coordination and synchronization among multiple processes.

Implementing components in a network using Python

Foundations of Computer Networks, Independent project

fall 2023

- Implemente learning switch, IPv4 router, and reliable transmission.
- Incorporated two timeout mechanisms in learning switch: Least Recently Used (LRU) and Least Traffic.
- sending and storage of ARP packets, packet forwarding with a timeout mechanism.
- ICMP packet handling
- simulated packet loss by generating random numbers and established sliding windows on both the sender and receiver sides to manage the transmission process.

Big data processing:music visualization system

Big data processing, 4-person team

spring 2024

- implement front-end and back-end interaction using Spring Boot: file downloads on a webpage, calls a backend program, ...
- Coordinating front-end and back-end content and progress

INTERNSHIPS

CITIC Group | Beijing, China

summer 2024

- Learn and understand the functions and work of different departments.
- Give reports and presentations about AI's impact on financial markets

SKILLS

Languages: Chinese, English.

Programming: Python, C++ (STL: vector, string, map, queue, list, ...)

REFERENCES

- [1] Lin, TC., Kim, I.H. & Hsieh, MH. A new operator extension of strong subadditivity of quantum entropy. Lett Math Phys 113, 68 (2023). <https://doi.org/10.1007/s11005-023-01688-6>