Nie Yichen

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EDUCATION BACKGROUND

Nanjing University (NJU, 985&211 project)   **Sep. 2021– Jun. 2025**
Degree: **Bachelor of Science in Computer Science and Technology**

Current GPA: 4.07 / 5

RESEARCH EXPERIENCE

Research on Strong Subadditivity of Quantum Information
Researcher, Fall 2023 – Fall 2024

- Analyze Lieb's proof and Lin et al.'s quantum strong subadditivity results.
- Compare the proof methods of Lieb and Lin et al., highlighting key differences.
- Explore properties of the quantum Markov state when equality holds in Lin et al.'s inequality.

Research on Chaitin's Constant
Researcher, Spring 2025 – Present

- Study recent advancements in Chaitin's constant and its applications.
- Investigate the mathematical properties and implications of Chaitin's constant in computation.
- Explore the relevance of Chaitin's constant in algorithmic information theory.

PROJECT EXPERIENCE

C Language Implementation of a Full System Simulator for CISC
Independent Project, Fall 2022

- Developed various modules of a CISC system in C, including ALU and cache.
- Implemented generic instruction decoding and addressing functions for system efficiency.
- Utilized inline functions and parameters to streamline execution module creation.

Implementing an Operating System in C
Independent Project, Fall 2023

- Contributed to the implementation of key OS modules, including BIOS and process synchronization.
- Created semaphores and managed process synchronization, solving the dining philosophers problem.
- Developed efficient process switching techniques and ensured system stability.

Implementing Components in a Network Using Python
Independent Project, Fall 2023

- Developed a learning switch, IPv4 router, and reliable transmission protocols.
- Incorporated timeout mechanisms (LRU and Least Traffic) into the learning switch for efficiency.
- Simulated packet loss and used sliding windows to manage transmission between sender and receiver.

Big Data Processing: Music Visualization System
Team Project, Spring 2024

- Implemented front-end and back-end interaction using Spring Boot for file download functionality.
- Coordinated with the team to ensure timely progress and alignment of content.
- Integrated music visualization features into the system for seamless user experience.

WORK EXPERIENCE

CITIC Group | Beijing, China
Intern, Summer 2024

- Assisted in developing and optimizing internal tools for data analysis using Python and SQL.
- Analyzed market trends and financial data, generating insights using machine learning algorithms.
- Collaborated with IT teams to implement AI-based solutions for risk assessment and forecasting.

OTHERS

Languages

- Chinese (Native); English (Fluent)

Programming Skills

- Python: Experienced in object-oriented programming, libraries like NumPy, pandas, and matplotlib
- C++: Proficient in Standard Template Library (STL) including vector, string, map, queue, list, etc.
- Other Languages: Basic knowledge of Java and C