

Zicheng Ma

Objective: To apply for a Master in Computer Science starting from 2024 fall

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EDUCATION

- University of Illinois Urbana-Champaign** US
Bachelor of Science in Computer Engineering GPA: 4.00/4.00 July 2020 - Present
- Zhejiang University** China
Bachelor of Science in Computer Engineering GPA: 4.00/4.00 July 2020 - Present
Relevant Courses and Grades: Communication Network-A+, Distributed Systems-A+, Computer Systems Engineering-A+, Computer Security-A+, Data Structures-A+, Database System-A, Algorithm-A.....

RESEARCH INTERESTS

Distributed System, System Reliability, Software Engineering, High-performance Computing

SKILLS

- Programming:** Rust, Python, Go, C, C++, SQL, MongoDB, Neo4j, x86 assembly
- Frameworks:** Kubernetes, Pytorch, Open-mmlab and its downstream frameworks, ReactJS, Hexo
- Tools:** Git, MySQL, Google Cloud, LaTeX, Markdown
- Languages:** English(Professional), Mandarin (Native)

RESEARCH EXPERIENCE

- Verifiable controller framework Anvil** Urbana-Champaign, US
Undergraduate Researcher supervised by Prof. Tianyin Xu from UIUC March 2023 - Now
 - Building k8s controllers for different application:** Built controllers for mainstream applications running on a Kubernetes cluster using Rust and Verus (verified Rust), including ZooKeeper, RabbitMQ, and Cassandra.
 - Design a new framework to verify controller:** Constructed a framework for building Kubernetes controllers that can verify liveness and safety, and propose a process for creating verifiable controllers.
- Human Pose Estimation Research** Zhejiang, China
Undergraduate Researcher supervised by Prof. Gaoang Wang from ZJU May 2022 - September 2022
 - Uniform dataset format:** Preprocessed different datasets according to the experimental requirements to realize the interoperability of data set formats
 - Design a new unsupervised training process:** Designed and used projection loss as a loss function to fine-tune cross-dataset training

COURSE PROJECTS

- Zinix System (C, x86 assembly)** Urbana-Champaign, US
Unix-like operating system [demo] December 2022
 - Basic functionalities:** Implemented an operating system supporting basic functionalities such as scheduling, interrupts, system calls, exceptions, and file systems.
 - Self-designed features:** Used implicit free list and slab cache to implement a virtual memory allocation system. Also implemented advanced signals and speaker, hard-disk drivers.
- Crime Map UIUC (MySQL, ReactJS, NodeJS)** Urbana-Champaign, US
Full-stack application visualizing criminal records around UIUC [code] December 2022
 - Crime database and basic CRUD:** Implemented a database containing past crime logs around UIUC and allowed users do basic CRUD commands on the database through our web page.
 - Advanced features:** Integrated Google Map API to show different crimes on a map to visualize them for users.
- Database system for medical appointments (C++, B+ Tree)** Zhejiang, China
A simple database based on B+ Tree, CS225 coursework [code] May 2022
 - B+ Tree data structure:** Used C++ to build B+ Tree as the base for our database system.
 - User-friendly UI:** Instead of using terminal commands, a simple and useful UI is presented to the user.
 - SQL style query language:** Implemented SQL style query language for the database, including a variety of collection operations and conditional judgment.

HONORS AND AWARDS

- Mathematical Contest In Modeling Finalist Award** (Top 1% of the competitors worldwide – May 2022)
- 2021 and 2022 National Scholarship** (The highest honor awarded to 2% of all university students in China) - October 2021 / 2022
- Zhejiang University Scholarship - First Prize** (GPA rank 1 in the grade) - June 2021

LEADERSHIP EXPERIENCE

- **Course assistant for Computer System Engineering** Urbana-Champaign, US
ECE391 CA working for Dpt. of ECE at UIUC February 2023 - May 2023
 - **Guiding students on projects:** Guided students to finish high workload machine problems. Helped them to design their own simple OS.
 - **Exam review:** Provided review sections during office hours to help students do well in exams.
- **Minister of Student Union Outreach Department** Zhejiang, China
Working in Student Union of Zhejiang University International Campus September 2021 - August 2022
 - **Attracting sponsorship:** Cooperated and negotiated with commercial companies to secure sponsorship for campus events.
 - **Campus liaison work:** Liaised with other universities and student organizations to hold inter-university exchange activities
- **Minister of Coffee Club** Zhejiang, China
Founder of a new club in campus September 2021 - May 2022
 - **Holding events:** Built a new Coffee Club on campus and led more than 80 new members. Organized and designed coffee activities.