Boxuan Hu

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◇ Github ◇ AcademicPage ◇ Blog

EDUCATION

Bachelor of Computer Science, Xi'an Jiaotong University September 2022 - June 2026
Honors Science Program(Computer Science)
Core Courses: Game Design and Development (100)/ Software-Defined Networks (99)
CGPA: 3.79/4.30, Score: 92.34/100 (89.34+3)

Visiting Student (Online), Carnegie Mellon University March 2024 - June 2024
Department of Computer Science
Relevant Coursework: Dual Algorithmic Design, Machine Learning and Data Streams

Visiting Student, University of California - Berkeley Augest 2024 - December 2024
Department of Electrical Engineering and Computer Sciences
Relevant Coursework: Great Ideas in Computer Architecture (CS61C) /
Computer Security (CS161) / Operating Systems and System Programming (CS162)

RESEARCH PUBLICATION && PATENTS (* INDICATES EQUAL CONTRIBUTIONS)

Chengzhen Liu, **Boxuan Hu***, Lifan Gu "*Hydrocephalus Diagnosis Support System Based on the UNet Model*"
Computer Software Copyright Registration Certificate,
Registration Number: 2024SR0750759 June 2024

Currently I'm conducting research under Professor Danfeng Shan in XJTU. We 've co-authored a top-tier paper in the field of network systems (pre-print). This paper focuses on enhancing data center network performance by proposing a **dynamic headroom allocation strategy** for switches. I designed and executed the experiment independently to measure the degree of isolation disruption caused by DSH (Dynamic and Shared Headroom). Additionally, I was responsible for improving three other experiments: PFC avoidance, Deadlock avoidance, and Collateral damage mitigation. My contributions involved enhancing queue-level congestion control algorithm in Sharedroom of switches, ensuring efficient operation under high concurrency and heavy load conditions. All experiments were based on ns-3.

Furthermore, in July, I joined NRG Group at Microsoft Research-Asia to collaborate on another paper. This project is supervised by Acad. Jianping Wu, P.R. Yongqiang Xiong of MSRA, and Professor Danfeng Shan. The research aims to **improve network performance in the deployment of large language models** within data center network clusters by minimizing the losses caused by collective communication and parallel computing. Currently in its early stages, I mainly focus on designing a new network simulation platform for large-scale, high-load scenarios based on Unison and simulating collective communication between GPUs using ns-3.

PROJECTS

Intelligent Document Automation and Knowledge Enhancement System May 2024 - July 2024
Teamed 3rd place globally, and rated as A+ at NUS Summer Workshop

- An AI-assisted document editor based on Kubernetes, integrating multiple components such as a frontend interface, backend processing, data preprocessing, message queue, data storage, knowledge base generation, and AI interaction
- The system is designed with scalability, high availability, and efficient data processing in mind, aiming to provide a smooth and intelligent document editing experience
- Under the supervision of Prof. Richard T. B. Ma, National University of Singapore

Designing an Innovative 2D Game Using Unity March 2024 - April 2024
Having Published on itch.io

- Utilizing Unity to construct game environments, simulate actions and events, and design sound effects
- Utilizing C# to design executable function abstraction and encapsulation, implementing OOP
- Under the supervision of Prof. Kelvin Sung, University of Washington Bothell

Hydrocephalus Diagnosis Support System Based on the UNet Model October 2023 - July 2024
Having Obtained Computer Software Copyright Registration Certificate
Awarded the Highest Istinction (Excellence Award) in National Undergraduate Innovation Training Program
· Training with the Unet model to achieve automated ventricular image segmentation
· Utilizing three-dimensional volume integration for modeling and computing Evans Index of patients ventricles
· Under the supervision of Prof. Chao Jin, Xi'an Jiaotong University

Design and Implementation of a Performance Testing Platform for NAND Flash Memory October 2023 - May 2024
Awarded Second Prize at 'Tengfei Cup' Innovation and Entrepreneurship Competition
· Design and construct the hardware interface connecting NAND flash memory chips to the testing platform
· Analyzing and validating the test results to identify performance bottlenecks and potential issues, and subsequently optimizing either hardware or software through adjustments
· Under the supervision of Prof. Shiqiang Nie, Xi'an Jiaotong University

INTERNSHIP/TRAININGS

Networking Research Group (NRG) @ Microsoft Research Lab - Asia
Research Assistant, AI for System and Networking July 2024 - Present
Work with Acad. Jianping Wu, P.R. Yongqiang Xiong, Prof. Danfeng Shan

School of Computing Summer Workshop @ National University of Singapore
Research Intern, Cloud Computing with Big Data May 2024 - July 2024
Work with Prof. Richard T. B. Ma

A NeTworked System Group (ANTS) @ Xi'an Jiaotong University
Research Intern, Datacenter Networks May 2023 - Present
Work with Prof. Danfeng Shan

ACHIEVEMENTS

Scholarship for Outstanding Students. **Third Prize**. Xi'an Jiaotong University *Fall 2023*
Bronze Medalist (team 53rd place). ACM ICPC Programming Contest. Shaanxi Region *Spring 2024*
Silver Medalist (ranking 9/103). ACM ICPC Programming Contest. Xi'an Jiaotong University *Spring 2023*
First Prize. Contemporary Undergraduate Mathematical Contest in Modeling. Shaanxi Region *Fall 2023*
First Prize. The Chinese Mathematics Competitions (CMC) *Fall 2023*
Third Prize. National College Student Olympic Mathematics Competition (CSOMC) *Spring 2023*
Excellence Award (Highest Distinction). National Undergraduate Innovation Training Program *Spring 2024*
Second Prize (ranking 91/1329). 'Tengfei Cup' Innovation and Entrepreneurship Competition *Spring 2024*

SKILLS AND INTERESTS

Research Interests	Datacenter Networks, Congestion Control, Traffic Management, Cloud-Computing
Research Tools	ns-3, Mininet, Ryu, VeriFlow
Programming Languages	C, C++, Python, C#, HTML/CSS, JavaScript, Julia, Assembly Language
Design Software	Git, SSH, Django, Linux, Shell, Docker, Kubernetes, Hadoop, MySQL, Xcode, Arduino, Swift, Unity, React, Vue.js
Text Composition	LaTeX, Markdown, Obsidian, Keynote

DECLARATION

I hereby declare that all the details furnished above are true to the best of my knowledge and belief.