Hengjia Yu

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EDUCATION

University of Illinois Urbana-Champaign Sep. 2021 - Present
Undergraduate - Computer Engineering GPA: 3.85/4.00

Zhejiang University Sep. 2021 - Present
Undergraduate - Electronic and Computer Engineering GPA: 3.88/4.00

RESEARCH INTERESTS

MLSys, Computer Systems, Computer Architecture, ML for System

ACADEMIC EXPERIENCE

Tensor-centric library for Graph Neural Network via Segment Reduction UCSanDiego
Supervised by: Prof. Jishen Zhao May 2024 - Now

- Implemented a specialized segment reduction library that achieved 2.5x speedup in GNN message passing operations compared to PyG baseline
- Developed compute-graph transformation passes to integrate with PyTorch's compiler framework
- Introduced novel tensor primitive operations specifically optimized for irregular graph structures

Distributed System for Temporal Graph Learning UIUC
Supervised by: Prof. Charith Mendis Dec 2023 - June 2024

- Participated in development and release of TGLite – a framework that reduces model redundancy through intelligent caching and de-duplicating for Temporal Graph Neural Networks (TGNN).
- Implemented an adaptive mini-batch generation strategy that improved training throughput by 3x while maintaining model accuracy
- Designed a distributed node memory mechanism that reduced communication overhead by 60% through locality-aware data placement

Neonatal Seizure Diagnosis Based on EEG Data Zhejiang University
Supervised by: Prof. Qinmin Yang and Chao Li Summer 2022

- Developed a novel CNN architecture combining STFT-based feature extraction with attention mechanisms for EEG signal analysis
- Achieved 95% detection accuracy on clinical dataset, representing a 15% improvement over previous methods

PROJECTS

Superscalar Out-of-Order Processor - ECE411: Computer Organization & Design UIUC
Advisor: Prof. Nam Sung Kim Oct. 2024 - Dec. 2024

- Developed a 2-way superscalar Out-of-Order RISC-V processor with Explicit Register Renaming, distributed Reservation Stations, and an extensive bypass network,
- Ranked **1st** among 40 groups. Achieved IPC over 0.75 on coremark (best case 1.15)
- Implemented several performance optimizations including Age-ordered issue scheduling, Split load/store queues, GShare branch predictior, achieving significant reduction in instruction wakeup latency

Operating System Design - ECE391: Operating System UIUC
Advisor: Prof. Steven S. Lumetta and Zbigniew T. Kalbarczyk Oct. 2023 - Dec. 2023

- Developed a Linux-like operating system from scratch with a team (group leader).
- Implemented basic OS functionalities and advanced features like round-robin scheduler, signals, writable file-system, and text-editor.

TEACHING EXPERIENCES

Course Assistant - ECE391: Operating Systems UIUC
2023 - 2024 Spring Semester

AWARDS

Provincial Government Scholarship of Zhejiang Province, China 2022
Top 3% students overall in Zhejiang province

Outstanding Student of Zhejiang University 2022 & 2024
Top 8% students overall in Zhejiang University

Dean's List, Grainger College of Engineering, UIUC 2022 - 2023
Top 15% students in grades of Grainger College of Engineering, UIUC

SKILLS

- **Programming:** Python, C, C++, Cuda, Matlab, x86 assembly
- **Languages:** English (professional), Mandarin (native)
- **Others:** Pytorch, Git, LaTeX, Sphinx, Markdown, Colab

OTHER EXPERIENCES

Director of Student New Media Center International Campus, ZJU
2022 - 2023 Academic Year

Campus Men's Volleyball Team Leader International Campus, ZJU
2022 - 2023 Academic Year

Vice Director of Brand Promotion Center ZJU-UIUC Joint Institute
2021 - 2022 Spring