

Hengjia Yu

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EDUCATION

University of California, San Diego <i>M.S. in Computer Science (Focus: Systems and AI Infrastructure)</i>	Sep 2025 - Apr 2027 (expected)
University of Illinois Urbana-Champaign <i>B.S. in Computer Engineering (with High Honors)</i>	Aug 2021 - May 2025 GPA: 3.84/4.00
Zhejiang University <i>B.E. in Electronic and Computer Engineering (Outstanding Graduate)</i>	Sep 2021 - Jun 2025 GPA: 3.89/4.00

PROJECTS

Tensor-centric library for Graph Neural Network via Segment Reduction <i>Supervised by: Prof. Jishen Zhao</i>	UC San Diego May 2024 - Dec 2024
- Implemented a specialized segment reduction library that achieved 2.5x speedup in Sparse Matrix Multiplication (SpMM) compared to PyG baseline. - Designed compute-graph transformation passes to integrate with PyTorch's compiler framework. - Introduced novel tensor primitive operations specifically optimized for irregular graph structures.	
CUDA LeNet Kernel Design <i>Advisor: Prof. Volodymyr Kindratenko</i>	UIUC Oct 2024 - Dec 2024
- Implemented and optimized a LeNet CNN on CUDA, transforming convolution into matrix multiplication. - Applied CUDA techniques such as kernel fusion, TensorCore, and index reuse, reducing global memory access by over 60% and improving kernel throughput by 2.5x compared to the unfused baseline. - Designed adaptive kernel strategies for different layer configurations, utilizing mixed TensorCore tile sizes ($8 \times 32 \times 16$ and $16 \times 16 \times 16$) to maintain >90% hardware utilization across convolutional layers.	
Superscalar Out-of-Order Processor <i>Advisor: Prof. Nam Sung Kim</i>	UIUC 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 #1 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 predictor.	
Operating System Design from Scratch <i>Advisor: Prof. Steven S. Lumetta and Prof. Zbigniew T. Kalbarczyk</i>	UIUC Oct 2023 - Dec 2023
- Developed a Linux-like operating system from scratch leading a team of 4. Ranked #4 among 50 groups. - Implemented basic OS functionalities like interrupt handling, virtual memory, device drivers, along with advanced features like round-robin scheduler, signals, file-system, and text-editor.	

WORKING EXPERIENCES

Teaching Assistant <i>ECE391: Operating Systems (SP24) & CS225: Data Structures (SP25)</i>	UIUC
Led weekly lab sessions and office hours, assisting students in debugging kernel-level code and evaluating programming assignments and exams.	

AWARDS

Provincial Government Scholarship of Zhejiang Province <i>Top 3% students in Zhejiang province, China</i>	2022 & 2024
Dean's List, Grainger College of Engineering, UIUC	2022 - 2025

SKILLS

- Programming:** Python, C, C++, CUDA, x86, RISC-V, Matlab
- Frameworks:** PyTorch, NVIDIA Dynamo, TensorRT, cuBLAS, HuggingFace, ONNX, vLLM
- Tools:** Docker, Kubernetes, Git, Nsight Systems, CMake, LaTeX