

Hanwen Liu

CONTACT	227 Coordinated Science Lab 1308 W Main St., Urbana, IL 61801	<i>Email:</i> hanwenl4@illinois.edu <i>Website:</i> hanwenliu.web.illinois.edu
EDUCATION	University of Illinois Urbana-Champaign M.S. in Electrical and Computer Engineering GPA: 4.00/4.00 Advisor: <i>Nam Sung Kim</i>	August 2023 – May 2025
	Zhejiang University B.E. in Electrical and Computer Engineering GPA: 3.95/4.00	August 2019 – July 2023
	University of Illinois Urbana-Champaign B.S. in Computer Engineering with <i>highest honors</i> , Minor in Mathematics GPA: 4.00/4.00	August 2019 – May 2023
AWARDS AND DISTINCTIONS	The Bronze Tablet Outstanding Graduate at Zhejiang University The A.R. (Buck) Knight Award Zhejiang University Scholarship - Second Prize Student Innovation and Entrepreneurship Award Zhejiang University Scholarship - Third Prize Student Leadership Award	2023 2023 2023 2022 2022 2020, 2021 2021
RESEARCH	NVDLA Generalization Advisor: <i>Nam Sung Kim</i> and <i>Dong Kai Wang</i> <ul style="list-style-type: none">Conducted comprehensive research to understand the NVIDIA Deep Learning Accelerator (NVDLA) and its ecosystem.Presented the core concepts and architecture of NVDLA to the team, elucidating its functionality and application scope.Customized the NVDLA microarchitecture for integration with various high-performance computing (HPC) applications, enhancing its versatility and application reach. Faster Sparse MTTKRP on Single-Instruction-Multiple-Data Architectures Advisor: <i>Edgar Solomonik</i> <ul style="list-style-type: none">Proposed and implemented GPU-accelerated Sparse MTTKRP algorithms using compact binning.Utilized mode-agnostic COO for efficient mode-i MTTKRP without tensor regeneration.Achieved 20.3x average and 31.4x peak speedup over baseline.Delivered oral presentation of results at UIUC CS REU showcase. Enhancements to Vector Addition and SpMV for Multi-GPU Environments Advisor: <i>Volodymyr Kindratenko</i> <ul style="list-style-type: none">Profiled and benchmarked to revamp existing algorithms, reducing multi-GPU communication overhead.Developed dynamic task distribution for GPUs, cutting down the latency of sequential tasks.	Aug. 2023 – Present May 2022 – Aug. 2022 Feb. 2022 – May 2022

PROJECT	JAL (A riscv-32imc processor) Nov. 2023 – Dec. 2023
	<ul style="list-style-type: none"> Implemented and verified an RV32IMC microprocessor with two teammates from scratch. Integrated advanced features within the microprocessor architecture, such as a DADDA tree multiplier, a local branch predictor, a branch target buffer, a return address stack, an intelligent prefetcher, a hierarchical multi-level cache system, and a fully parameterized pipelined cache, alongside support for compact 16-bit instruction execution. Achieved the distinction of creating the fastest microprocessor in the class, outperforming 29 other groups in speed and efficiency benchmarks.
	Nyx OS (A Unix-based operating system) Mar. 2022 – May 2022
	<ul style="list-style-type: none"> Collaborated in a team of four to architect and develop a Unix-based operating system from the ground up, encompassing over 11,000 lines of code. Integrated comprehensive features into the OS, including filesystem, paging, multi-terminal, scheduler, a modern GUI, network functionality, and extensive driver support. Spearheaded the development of the graphical user interface, infusing it with more than 12 advanced features, aligning with modern GUI standards. Attained a 2nd standing in a field of over 600 competitive teams within 5 years.
TEACHING	CS 225: Discreet Mathematics, UIUC ECE 220: Computer Systems and Programming, UIUC ECE 313: Probability with Engineering Applications, UIUC ECE 314: Probability in Engineering Lab, UIUC ECE 408: Applied Parallel Programming, UIUC MATH 213: Discreet Mathematics, ZJUI RHET 101: Principle of Writing, UIUC RHET 102: Principle of Research, UIUC
	<ol style="list-style-type: none"> Head Teaching Assistant Spring 2024 <i>ECE 408</i>; under: Volodymyr Kindratenko Teaching Assistant Spring 2024 <i>CS 225</i>; under: Volodymyr Kindratenko and Yushi Chen Teaching Assistant Fall 2023 <i>ECE 408</i>; under: Sanjay Patel and Volodymyr Kindratenko Head Teaching Assistant Spring 2023 <i>CS 225</i>; under: Volodymyr Kindratenko, Gaoang Wang, and Zuozhu Liu Teaching Assistant Spring 2023 <i>ECE 313 & 314</i>; under: Mark Butala and Xu Chen Writing Assistant Spring 2023 <i>RHET 102</i>; under: Mary Hays Head Teaching Assistant Fall 2022 <i>ECE 220</i>; under: Steven Lumetta and Pavel Loskot; website Teaching Assistant Fall 2022 <i>ECE 408</i>; under: Sanjay Patel and Volodymyr Kindratenko Writing Assistant Fall 2022 <i>RHET 101</i>; under: Mary Hays Teaching Assistant Fall 2021 <i>Math 213</i>; under: Klaus-Dieter Schewe Writing Assistant Supervisor Fall 2021 <i>RHET 101</i>; under: Marilyn Holguin

12. Writing Assistant Supervisor
RHET 102; under: Marilyn Holguin
13. Writing Assistant
RHET 101; under: Marilyn Holguin

Spring 2021

Fall 2020