

Jae-Won Chung

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Summary

I am a fifth year PhD candidate in CSE at the University of Michigan, advised by [Professor Mosharaf Chowdhury](#). I build **efficient software systems for deep learning**, with a recent focus on the efficient management of not only time, but also **energy**. My research views energy as a first-class systems resource that is worth carefully optimizing and allocating based on precise measurement and understanding.

I am passionate about **open-source** software and making real-world impact with my research. My open-source works, including the [Zeus](#) library, have received wide recognition from academia and industry from for instance [Google](#), [PyTorch Foundation](#), and [GitHub](#). I created and lead the [ML.ENERGY](#) initiative as part of my research and open-source efforts, which is now a cross-institutional effort.

Education

University of Michigan

PH.D. CANDIDATE IN COMPUTER SCIENCE AND ENGINEERING

Ann Arbor, MI, USA

Sep 2021 - present

University of Michigan

M.S. IN COMPUTER SCIENCE AND ENGINEERING

Ann Arbor, MI, USA

Sep 2021 - Apr 2023

Seoul National University

B.S. IN ELECTRICAL AND COMPUTER ENGINEERING

Seoul, South Korea

Mar 2015 - Aug 2021

- GPA: 4.04/4.3 (overall) 4.15/4.3 (major), Summa Cum Laude. Period includes two years of military service.

Publications

Peer-reviewed conference publications

* Equal contribution

- The ML.ENERGY Benchmark: Toward Automated Inference Energy Measurement and Optimization**, [Jae-Won Chung](#), Jeff J. Ma, Ruofan Wu, Jiachen Liu, Oh Jun Kweon, Yuxuan Xia, Zhiyu Wu, Mosharaf Chowdhury, **NeurIPS Datasets & Benchmarks track (spotlight)**, 2025 (Spotlight acceptance rate = 2.81%)
- Reducing Energy Bloat in Large Model Training**, [Jae-Won Chung](#), Yile Gu, Insu Jang, Luoxi Meng, Nikhil Bansal, Mosharaf Chowdhury, **SOSP**, 2024 (Acceptance rate = 17.34%)
- Zeus: Understanding and Optimizing GPU Energy Consumption of DNN Training**, [Jie You*](#), [Jae-Won Chung*](#), Mosharaf Chowdhury, **NSDI**, 2023 (Acceptance rate = 18.38%)
- ShadowTutor: Distributed Partial Distillation for Mobile Video DNN Inference**, [Jae-Won Chung](#), Jae-Yun Kim, Soo-Mook Moon, International Conference on Parallel Processing (**ICPP**), 2020 (Acceptance rate = 28.99%)

Preprints and workshop publications

- Where Do the Joules Go? Diagnosing Inference Energy Consumption**, [Jae-Won Chung](#), Ruofan Wu, Jeff J. Ma, Mosharaf Chowdhury, Preprint, 2026
- Kareus: Joint Reduction of Dynamic and Static Energy in Large Model Training**, Ruofan Wu, [Jae-Won Chung](#), Mosharaf Chowdhury, Preprint, 2026
- Cornserve: Efficiently Serving Any-to-Any Multimodal Models**, Jeff J. Ma*, [Jae-Won Chung*](#), Akshay Jajoo, Myungjin Lee, Mosharaf Chowdhury, Preprint, 2025
- Toward Cross-Layer Energy Optimizations in AI Systems**, [Jae-Won Chung](#), Nishil Talati, Mosharaf Chowdhury, **DOE ASCR Energy-Efficient Computing for Science Workshop**, 2024
- Andes: Defining and Enhancing Quality-of-Experience in LLM-Based Text Streaming Services**, Jiachen Liu, [Jae-Won Chung](#), Zhiyu Wu, Fan Lai, Myungjin Lee, Mosharaf Chowdhury, Preprint, 2024
- Chasing Low-Carbon Electricity for Practical and Sustainable DNN Training**, Zhenning Yang, Luoxi Meng, [Jae-Won Chung](#), Mosharaf Chowdhury, **ICLR Workshop: Tackling Climate Change with Machine Learning**, 2023

Open Source Projects

- [Zeus](#) (☆331 ⚡ 40), [A framework for deep learning energy measurement and optimization.](#) **PyTorch ecosystem project.** Provides a unified abstraction over various CPU, GPU, and SoC vendors, and an array of time & energy optimizers.
- [Cornserve](#) (☆106 ⚡ 6), [An efficient serving platform for any-to-any multimodal models.](#) Takes a microservice approach to serving complex-structured multimodal input & output models.
- [BERT4Rec-VAE-Pytorch](#) (☆406 ⚡ 98), [A PyTorch framework for recommendation model training,](#) with abstract classes for pluggable model, dataset, and samplers. BERT4Rec and Netflix VAE models implemented.
- [Reason](#) (☆195 ⚡ 4), [A shell for managing research papers,](#) written in Rust. Supports importing papers from file and URL, attaching markdown notes, and creating an HTML book with notes. Uses serde to persist data in human-readable and cloud sync-friendly format.
- [Pegasus](#) (☆32 ⚡ 3), [An SSH command runner with a focus on simplicity,](#) written in Rust. Runs multiple commands asynchronously using the tokio runtime and streams stdout and stderr back to the user. Battle-tested through multiple research projects and benchmarking.

Number of stars and forks are up-to-date as of January 30th, 2026.

Honors & Awards

Nov 2025	Slingshot Grant , \$25,000 USD AWS Credits for the development of the ML.ENERGY Initiative	Laude Institute
Aug 2025	GitHub Secure Open Source Fund , \$10,000 for the development of the Zeus project	GitHub
May 2024	PyTorch Ecosystem Project , Zeus was included in the PyTorch Ecosystem	PyTorch Foundation
Jan 2024	Research award , \$20,000 for the development of the ML.ENERGY Initiative	Salesforce
Jan 2024	Mozilla Technology Fund 2024 , \$50,000 for the development of the Zeus project	Mozilla
Nov 2022	Carbon Hack '22 Second Best Solution , Carbon-Aware DNN Training with Zeus, \$25,000	Green Software Foundation
Jul 2021	Kwanjeong Overseas Scholarship , \$25,000	Kwanjeong Educational Foundation
Mar 2019	Kwanjeong Undergraduate Scholarship , \$20,000 over two years	Kwanjeong Educational Foundation

Talks

Dec 2025	Energy and Power as First-Class ML Design Metrics (w/ NVIDIA, Google, Meta)	NeurIPS 25 Tutorial
Oct 2025	Energy as a First-Class ML Design Metric	UW-Madison MadSystems Seminar
Sep 2025	Power and Energy as First-Class AI Design Metrics	KPAI (Bay Area Korean AI Meetup)
Jun 2025	Energy as a First-Class Resource in Machine Learning Systems	Pruna AI
May 2025	Energy-Efficient Systems for Machine Learning	Harvard Power and AI Initiative
Nov 2024	Energy-Efficient Systems for Machine Learning	SOSP 24 Doctoral Workshop
Apr 2024	Power and Energy Considerations in Machine Learning Systems	University of Michigan (EECS 598)
Oct 2023	Energy-Efficient Software Systems for Machine Learning	Seoul National University
Oct 2023	Energy-Efficient Deep Learning with PyTorch and Zeus	PyTorch Conference
Sep 2023	Energy-Efficient Deep Learning with Zeus	Massachusetts Institute of Technology

Selected Media Coverage

My research and open-source works have been covered by various media outlets, including MIT Technology Review, ArsTechnica, and Science News.

Jul 2025	How much energy does your AI prompt use? It depends.	Science News
May 2025	We did the math on AI's energy footprint. Here's the story you haven't heard.	MIT Technology Review
May 2025	AI Consumes Lots of Energy. Can It Ever Be Sustainable?	The New Stack
Mar 2025	Can we make AI less power-hungry? These researchers are working on it.	ArsTechnica (front page)
Nov 2024	Up to 30% of the power used to train AI is wasted: A software tool could help fix that.	Tech Xplore
Apr 2023	University of Michigan's 'Zeus' Framework Downsizes AI's Massive Carbon Footprint.	HPCWire
Apr 2023	Researchers claim they can cut AI training energy demands by 75%.	DatacenterDynamics

Service

- **Ad-hoc reviewer**, Nature
- **Systems Reading Group Organizer**, Paper reading group inside Michigan CSE. Organizer from September 2022 to December 2025.

Teaching

- **Systems for Generative AI (UMich, Fall 25)**, GSI, three lectures on GenAI and GenAI systems fundamentals. **Instructor evaluation median 5.00 (highest possible)**. Written comments included phrases “excellent” (three times), “perfect,” and “one of the best.”
- **Operating Systems (SNU, Spring 21)**, Lead TA, managed Linux kernel hacking projects and led student team design reviews.
- **Computer Architecture (SNU, Fall 20)**, Peer tutor, provided 30 hours of online lecture. **Best Tutor Award**.