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 *Ann Arbor, MI, USA*

Ph.D. candidate in Computer Science and Engineering *Sep 2021 - present*

University of Michigan *Ann Arbor, MI, USA*

M.S. in Computer Science and Engineering *Sep 2021 - Apr 2023*

Seoul National University *Seoul, South Korea*

B.S. in Electrical and Computer Engineering *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

- **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

Honors & Awards

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

- **Systems/Software Reading Group,** Paper reading group inside Michigan CSE, Organizer since Fall 2022

Teaching

- **CSE585: Systems for Generative AI (UMich, Fall 25),** GSI, three lectures on GenAI and GenAI systems fundamentals.
- **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!**