Jae-Won **Chung**

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Summary

I am a second year PhD student in CSE at the University of Michigan, working with Professor Mosharaf Chowdhury. My research interest is in the intersection of software systems and deep learning, with a recent focus on sustainability aspects such as energy consumption and carbon footprint. I lead the ML Energy initiative.

Education

University of Michigan

Ann Arbor, MI, USA

PH.D. STUDENT IN COMPUTER SCIENCE AND ENGINEERING — *Sep 2021 - present*

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

- **Zeus: Understanding and Optimizing GPU Energy Consumption of DNN Training,** Jie You*, Jae-Won Chung* (*: co-primary authors), Mosharaf Chowdhury, Symposium on Networked Systems Design and Implementation (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%)

Experience

SymbioticLab

UMich, United States

GRADUATE STUDENT RESEARCH ASSISTANT — *Sep 2022 - Present*

- Advised by Professor Mosharaf Chowdhury.
- *Zeus*: Discovered the trade-off between DNN training time and energy. Designed a Multi-Armed Bandit solution for time-energy optimization.

Software Platform Lab

SNU, South Korea

RESEARCH INTERN — *Apr 2020 - Jun 2022*

- Developed Crane, a GPU cluster manager for AutoML workloads. Built a Kubernetes backend that scaled to 288 GPUs.

Virtual Machine and Optimization Lab

SNU, South Korea

SENIOR PROJECT — *Dec 2019 - Jun 2020*

- *ShadowTutor*: Online model specialization for edge video inference. Use of knowledge distillation reduced network data transfer by 95%.

Computer Vision Lab

SNU, South Korea

UNDERGRADUATE INTERN — *Jun 2019 - Dec 2019*

- Designed improved meta-initialization methods for Model-Agnostic Meta-Learning (MAML) with neural memory modules and convex programs.

Lab of Imaging Science and Technology

SNU, South Korea

UNDERGRADUATE INTERN — *Jun 2019 - Aug 2019*

- Designed and implemented a full deep learning pipeline for Quantitative Susceptibility Mapping, a vision task for 3D MRI field data.

Honors & Awards

Nov 2022	**Carbon Hack '22 Second Best Solution,** Based on Zeus, $25,000	*Green Software Foundation*
Jul 2021	**Kwanjeong Overseas Scholarship,** $100,000 over four years	*Kwanjeong Educational Foundation*
Mar 2019	**Kwanjeong Undergraduate Scholarship,** $20,000 over two years	*Kwanjeong Educational Foundation*

Teaching

- **Spring 2021 Operating Systems,** Main TA, Managed course projects and led group design reviews.
- **Fall 2020 Computer Organization (Undergraduate architecture),** Peer tutor, Provided 30 hours of online lecture, **Best Tutor Award!**

Skills

Language	Python, Rust, CUDA, C++, Verilog, C, Bash
Framework	PyTorch, Pandas, Matplotlib, FastAPI
Methodology	Machine Learning, Deep Learning, Multi-Armed Bandit
Tool	Docker, Kubernetes, KubeFlow, LaTeX
English	TOEFL 120 (Perfect score), GRE 167/170/4.5