Haizhong Zheng

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INTERESTS

Hardware-aware efficient models; machine learning system; data efficiency algorithm.

My research focuses on building models, algorithms, and systems for scalable and efficient ML. The goal is to bridge the gap between the rapid scaling of models and the slower scaling of hardware and high-quality data. In particular, my work has been along two lines: 1) Designing and training hardware-aware and system-aware models for fast model inference. 2) Designing algorithms for efficient data selection, augmentation, and human feedback.

EDUCATION

University of Michigan, Ann Arbor 2024
Ph.D., Computer Science
Advisor: Prof. Atul Prakash

Shanghai Jiao Tong University (SJTU) 2015, 2018
B.S. & M.S., Computer Science and Engineering
Advisor: Prof. Haojin Zhu

WORK EXPERIENCE

Carnegie Mellon University (CMU) Jan. 2025 - Current
Postdoctoral Researcher
Advisor: Prof. Beidi Chen

Lawrence Livermore National Laboratory (LLNL) May. 2023 - Aug. 2023
Research Intern
Mentor: Dr. Bhavya Kailkhura

Amazon Web Service (AWS) May. 2021 - Aug. 2021
Applied Scientist Intern
Mentor: Dr. Wei Zhang and Dr. Qian Cui

SELECTED PUBLICATIONS

- Adaptive Skeleton Graph Decoding
  Shuowei Jin*, Yongji Wu*, Haizhong Zheng, Qingzhao Zhang, Matthew Lentz, Z. Morley Mao, Atul Prakash, Feng Qian, Danyang Zhuo
  In Submission
- Harmful Terms and Where to Find Them: Measuring and Modeling Unfavorable Financial Terms and Conditions in Shopping Websites at Scale
  Elisa Tsai, Neal Mangaokar, Boyuan Zheng, Haizhong Zheng, Atul Prakash
  WWW 2025, *Oral*
- Label-Free Coreset Selection with Proxy Training Dynamics
  Haizhong Zheng*, Elisa Tsai*, Yifu Lu, Jiachen Sun, Brian R. Bartoldson, Bhavya Kailkhura, Atul Prakash
  ICLR 2025
- Learn To be Efficient: Build Structured Sparsity in Large Language Models
  Haizhong Zheng, Xiaoyan Bai, Xueshen Liu, Z. Morley Mao, Beidi Chen, Fan Lai, Atul Prakash
  NeurIPS 2024, *Spotlight*

- Leveraging Hierarchical Feature Sharing for Efficient Dataset Condensation
  Haizhong Zheng, Jiachen Sun, Shutong Wu, Bhavya Kailkhura, Zhuoqing Mao, Chaowei Xiao, Atul Prakash
  ECCV 2024
- CALICO: Self-Supervised Camera-LiDAR Contrastive Pre-training for BEV Perception
  Jiachen Sun, Haizhong Zheng, Qingzhao Zhang, Atul Prakash, Z. Morley Mao, Chaowei Xiao
  ICLR 2024
- Coverage-centric Coreset Selection for High Pruning Rates
  Haizhong Zheng, Rui Liu, Fan Lai, Atul Prakash
  ICLR 2023
- Efficient Adversarial Training with Transferable Adversarial Examples
  Haizhong Zheng, Ziqi Zhang, Juncheng Gu, Honglak Lee, Atul Prakash
  CVPR 2020
- Analyzing the Interpretability Robustness of Self-Explaining Models
  Haizhong Zheng, Earlence Fernandes, Atul Prakash
  ICML 2019 Workshop
- Smoke Screener or Straight Shooter: Detecting Elite Sybil Attacks in User-Review Social Networks
  Haizhong Zheng, Minhui Xue, Hao Lu, Shuang Hao, Haojin Zhu, Xiaohui Liang, Keith Ross
  NDSS 2018

(* indicates equal contribution)

GRANT PROPOSALS

I actively contributed to the proposal design, proposal writing, and presentation for the following grants:

Assessing and Improving Safety and Alignment of LLMs — NAIRR Pilot, 2024
GPU budgets — PI: Atul Prakash

Data Efficiency of LLMs Fine-tuning with RLHF — Cisco, 2023
$150*K* — PI: Atul Prakash

Intelligent Assistants for Detecting Social Engineering Scams — OpenAI, 2023
$100*K* — PI: Atul Prakash

TEACHING

Co-Lead Instructor — *Winter 2023*
Secure and Trustworthy Machine Learning — UMich EECS 598

- My responsibilities include designing the course, teaching the lectures, leading discussions, advising course projects, and office hours.
- EECS 598 covers research topics in machine learning security and privacy.
- Course rating: 4.9 out of 5; Instructor rating: 5 out of 5.

Graduate Student Instructor — *Fall 2021*
Data Structures and Algorithms — UMich EECS 281

- My responsibilities include teaching lectures, leading discussions on a weekly lab section, grading, and holding 6hrs of office hours each week.

STUDENT MENTORED

I am fortunate to mentor and co-advise the research of the following students:

- **Ph.D. Students**: Elisa Tsai (Umich CSE), Shuowei Jin (Umich CSE), Ruiyang Zhu (Umich CSE), Xueshen Liu (Umich CSE)
- **Masters**: Tianyu Zhang (→ ByteDance), Tiejin Chen (→ ASU Ph.D.), Shutong Wu (→ UWsic Ph.D.), Dongfang Ling (CMU CS)
- **Undergraduates**: Ziqi Zhang (→ Google), Xiaoyan Bai (→ UChicago Ph.D.), Yifu Lu (Umich CSE), Chengshuo Jiang (Umich CSE)

SERVICE

Conference/Journal Paper Reviewer: ECCV 2020, TPAMI 2020, ICLR 2022-2024, NeurIPS 2022-2024, ICML 2023-2024, AAAI 2024, ICML 2024 ES-FoMo-II Workshop

AWARDS & HONORS

- Rackham Travel Grant: ICML'19 2019
- Academic Excellence Scholarship of SJTU 2015-2017
- Best Presentation Award in A3 Foresight Program 2015 Annual Workshop 2015
- Academic Excellence Scholarship of SJTU 2012-2014
- National Olympiad in Informatics in Provinces (NOIP), First Prize 2010

REFERENCES

Prof. Atul Prakash
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Computer Science & Engineering
University of Michigan
aprakash@umich.edu

Prof. Beidi Chen
Assitant Professor
Electrical and Computer Engineering
Carnegie Mellon University
beidic@andrew.cmu.edu

Prof. Chaowei Xiao
Assitant Professor
Information School
University of Wisconsin, Madison
cxiao34@wisc.edu

Dr. Bhavya Kailkhura
Principal Research Scientist
Center for Applied Scientific Computing
Lawrence Livermore National Laboratory
kailkhura1@llnl.gov