

YI DING

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RESEARCH INTERESTS

AI/ML Systems, Sustainable Computing, Human-Centered Computing

PROFESSIONAL EXPERIENCE

Purdue University

Assistant Professor in Elmore Family School of Electrical and Computer Engineering
Affiliated Faculty, Institute for a Sustainable Future (ISF)
Affiliated Faculty, Institute for Physical Artificial Intelligence (IPAI)
PI, STYLE (SusTainable computing sYstems and LEarning) Lab

West Lafayette, IN, USA

8/2023 – Present

Massachusetts Institute of Technology

Postdoctoral Associate & NSF Computing Innovation Fellow. Mentor: Michael Carbin

Cambridge, MA, USA

1/2021 – 8/2023

Meta

Visiting Researcher

Cambridge, MA, USA

10/2021–12/2022

Google

Research Intern

Sunnyvale, CA, USA

6/2019–9/2019

EDUCATION

University of Chicago

Ph.D. & MS in Computer Science. Advisor: Henry Hoffmann.

Chicago, IL, USA

8/2015 – 12/2020

Nanyang Technological University

Ph.D. Candidate in Computer Science. Passed Qualification Exam.

Singapore

7/2013 – 7/2015

Beijing Jiaotong University

B.E. in Electronic Engineering. Graduated with Highest Honor.

Beijing, China

9/2008 – 6/2012

AWARDS AND HONORS

Innovation Award, Quantum Computing for Drug Discovery Challenge at ICCAD

2023

CRA/CCC/NSF Computing Innovation Fellowship

2020-2023

Meta Research Award

2021

EECS Rising Stars at UC Berkeley

2020

PUBLICATIONS

G Google Scholar; Underline Students advised by me; ★ Equal contribution; † Corresponding faculty author

[C1] **Yi Ding**, Aijia Gao, Thibaud Ryden, Michal Sedlak, Essam Ewaisha, Igor Marnat, Henry Hoffmann. “Cost-aware Duration Prediction for Software Upgrades in Datacenters.” *The 9th Annual Conference on Machine Learning and Systems (MLSys)*, 2026.

[C2] Zhuoli Yin, **Yi Ding**, Reem Khir, Hua Cai. “ViTSP: A Vision Language Models Guided Framework for Large-Scale Traveling Salesman Problems.” *The 14th International Conference on Learning Representations (ICLR)*, 2026.

[C3] Yuyang Tian, Desen Sun, **Yi Ding**, Sihang Liu. “Cache Your Prompt When It’s Green — Carbon-Aware Caching for Large Language Model Serving.” *ACM on Measurement and Analysis of Computer Systems (SIGMETRICS)*, 2026.

[J4] **Yi Ding**†, Tianyao Shi, Yanran Wu, Inez Hua. “Beyond Climate Change: A Holistic Framework for Evaluating the Environmental Impact of Computing Systems.” *The Magazine for Environmental Manager (EM)*, 2025.

- [C5] Bran Knowles, Vicki L. Hanson, Christoph Becker, Mike Berners-Lee, Andrew A. Chien, Benoit Combemale, Vlad Coroama, Koen De Bosschere, **Yi Ding**, Adrian Friday, Boris Gamazaychikov, Lynda Hardman, Simon Hinterholzer, Matthias Hojer, Lynn Kaack, Lenneke Kuijer, Anne-Laure Ligozat, Jan Tobias Muehlberg, Yunmook Nah, Thomas Olsson, Anne-Cecile Orgerie, Daniel Pargman, Birgit Penzenstadler, Tom Romanoff, Emma Strubell, Colin Venters, and Junhua Zhao. “Climate Change: What is Computing’s Responsibility?” (*Dagstuhl Perspectives Workshop 25122*). In *Dagstuhl Reports*, Volume 15, Issue 3, pp. 113-124, Schloss Dagstuhl – Leibniz-Zentrum für Informatik, 2025
- [J6] Tianyao Shi*, Yanran Wu*, Sihang Liu, and **Yi Ding**[†]. “Disaggregated Speculative Decoding for Carbon-Efficient LLM Serving.” *IEEE Computer Architecture Letters (CAL)*, 2025.
- [C7] Yanran Wu, Inez Hua, and **Yi Ding**[†]. “Unveiling Environmental Impacts of Large Language Model Serving: A Functional Unit View.” *The 63rd Annual Meeting of the Association for Computational Linguistics (ACL)*, 2025.
- [J8] Yanran Wu, Inez Hua, and **Yi Ding**[†]. “Not All Water Consumption Is Equal: A Water Stress Weighted Metric for Sustainable Computing.” *The 4th Workshop on Sustainable Computer Systems (HotCarbon) and ACM SIGENERGY Energy Informatics Review (EIR)*, 2025.
- [J9] Tianyao Shi, Ritvik Kumar, Inez Hua, and **Yi Ding**[†]. “When Servers Meet Species: A Fab-to-Grave Lens on Computing’s Biodiversity Impact.” *The 4th Workshop on Sustainable Computer Systems (HotCarbon) and ACM SIGENERGY Energy Informatics Review (EIR)*, 2025.
- [C10] Leyi Yan, Linda Wang, Sihang Liu, and **Yi Ding**[†]. “EnsembleCI: Ensemble Learning for Carbon Intensity Forecasting.” *The 16th ACM International Conference on Future Energy Systems (e-Energy)*, 2025.
- [C11] Meghna Roy Chowdhury, Wei Xuan, Sheyras Sen, Yixue Zhao, and **Yi Ding**[†]. “Predicting and Understanding College Student Mental Health with Interpretable Machine Learning.” *IEEE/ACM Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE)*, 2025.
- [C12] Wei Xuan, Meghna Roy Chowdhury, **Yi Ding**, and Yixue Zhao. “Unlocking Mental Health: Exploring College Students’ Well-being through Smartphone Behaviors.” *IEEE/ACM 12th International Conference on Mobile Software Engineering and Systems (MOBILESoft)*, 2025.
- [C13] Meghna Roy Chowdhury, **Yi Ding**, and Shreyas Sen. “SSL-SE-EEG: A Framework for Robust Learning from Unlabeled EEG Data with Self-Supervised Learning and Squeeze-Excitation Networks.” *The 47th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, 2025.
- [C14] **Yi Ding**[†] and Tianyao Shi. “Sustainable LLM Serving: Environmental Implications, Challenges, and Opportunities.” *The 15th International Green and Sustainable Computing Conference (IGSC)*, 2024.
- [J15] Amy Li, Sihang Liu, and **Yi Ding**[†]. “Uncertainty-Aware Decarbonization for Datacenters.” *The 3rd Workshop on Sustainable Computer Systems (HotCarbon) and ACM SIGENERGY Energy Informatics Review (EIR)*, 2024.
- [J16] Sophia Nguyen*, Beihao Zhou*, **Yi Ding**, and Sihang Liu. “Towards Sustainable Large Language Model Serving.” *The 3rd Workshop on Sustainable Computer Systems (HotCarbon) and ACM SIGENERGY Energy Informatics Review (EIR)*, 2024.
- [C17] Gokul Subramanian Ravi, Pranav Gokhale, **Yi Ding**, William Kirby, Kaitlin Smith, Jonathan M. Baker, Peter J. Love, Henry Hoffmann, Kenneth R. Brown, and Frederic T. Chong. “CAFQA: A Classical Simulation Bootstrap for Variational Quantum Algorithms.” *The 28th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPOLOS)*, 2023.
2023 Innovation Award, Quantum Computing for Drug Discovery Challenge at ICCAD.
- [C18] Alex Renda, **Yi Ding**, and Michael Carbin. “Turaco: Complexity-Guided Data Sampling for Training Neural Surrogates of Programs.” *ACM SIGPLAN Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, 2023.
- [J19] Guillaume Basse, **Yi Ding**, and Panos Toulis. “Minimax Designs for Causal Effects in Temporal Experiments with Treatment Habituation.” *Biometrika*, 2023.
- [C20] **Yi Ding**, Avinash Rao, Hyebin Song, Rebecca Willett, and Henry Hoffmann. “NURD: Negative-Unlabeled Learning for Online Datacenter Straggler Prediction.” *Machine Learning and Systems (MLSys)*, 2022.

- [C21] **Yi Ding**, Ahsan Pervaiz, Michael Carbin, and Henry Hoffmann. Generalizable and Interpretable Learning for Configuration Extrapolation.” *The 29th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)*, 2021.
- [C22] Alex Renda, **Yi Ding**, and Michael Carbin. “Programming with Neural Surrogates of Programs.” *ACM SIGPLAN International Symposium on New Ideas, New Paradigms, and Reflections on Programming and Software (Onward!)*, 2021.
- [J23] Kathryn E. Schertz, James Saxon, Carlos Cardenas-Iniguez, Luis Bettencourt, **Yi Ding**, Henry Hoffmann, and Marc G. Berman. “Neighborhood Street Activity and Greenspace Usage Uniquely Contribute to Predicting Crime.” *npj Urban Sustainability*, 2021.
- [C24] **Yi Ding** and Panos Toulis. “Dynamical Systems Theory for Causal Inference with Application to Synthetic Control Methods.” *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2020.
- [C25] Ming Gao, **Yi Ding**, and Bryon Aragam. A Polynomial-Time Algorithm for Learning Nonparametric Causal Graphs.” *Advances in Neural Information Processing Systems (NeurIPS)*, 2020.
- [C26] **Yi Ding**, Nikita Mishra, and Henry Hoffmann. “Generative and Multi-Phase Learning for Computer Systems Optimization.” *The 46th International Symposium on Computer Architecture (ISCA)*, 2019.
- [C27] **Yi Ding**, Risi Kondor, and Jonathan Eskreis-Winkler. “Multiresolution Kernel Approximation for Gaussian Process Regression.” *Advances in Neural Information Processing Systems (NeurIPS)*, 2017.
Spotlight Presentation, Top 4% Submissions.
- [C28] **Yi Ding**, Chenghao Liu, Peilin Zhao, and Steven C.H. Hoi. “Large Scale Kernel Methods for Online AUC Maximization.” *IEEE International Conference on Data Mining (ICDM)*, 2017.
Long Oral, Top 8% Submissions.
- [C29] **Yi Ding**, Peilin Zhao, Steven C.H. Hoi, and Yew-Soon Ong. “An Adaptive Gradient Method for Online AUC Maximization.” *The AAAI Conference on Artificial Intelligence (AAAI)*, 2015.
Oral Presentation, Top 10% Submissions.
- [C30] Pengcheng Wu, **Yi Ding**, Peilin Zhao, Chunyan Miao, and Steven C.H. Hoi. “Learning Relative Similarity by Stochastic Dual Coordinate Ascent.” *The AAAI Conference on Artificial Intelligence (AAAI)*, 2014.

RESEARCH ADVISING

PhD Students

Asher Sprigler (ECE), Purdue University	Fall 2025–
Lauren Caccamise (ECE), Purdue University	Fall 2025–
Tianyao Shi (ECE), Purdue University	Fall 2024–
Yanran Wu (CS), Purdue University	Fall 2023–

PhD Thesis Committee

Meghna Roy Chowdhury (ECE), Purdue University	Fall 2021–
Zhuoli Yin (IE), Purdue University	Fall 2021–

Master Students

Hyunji Kim, MIT	2021–2022
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Undergraduate Students

Barbara Su, Rice University (Remote Intern, SURF)	2025
Jaewon Cho, Purdue University (DUIRI, awarded \$1,000 fellowship)	Spring 2025
Isha Shamim, Purdue University (DUIRI, awarded \$1,000 fellowship)	Spring 2025
Gavin Fortwendel, Purdue University (DUIRI, awarded \$1,000 fellowship)	Fall 2024
— Won the 1st Place in Research Talk in CoE at Fall 2024 Undergrad Research Expo	
Sarah Deniz, Purdue University (DUIRI, awarded \$1,000 fellowship)	Fall 2024
Leyi Yan, University of Waterloo (One e-Energy'25 paper published)	Fall 2024
Linda Wang, University of Waterloo (One e-Energy'25 paper published)	Fall 2024
Amy Li, University of Waterloo (One HotCarbon'24 paper published)	Spring 2024

Beihao Zhou, University of Waterloo (One HotCarbon'24 paper published)
Sophia Nguyen, University of Waterloo (One HotCarbon'24 paper published)
Avinash Rao, University of Chicago (One MLSys'22 paper published)

Spring 2024
Spring 2024
2019–2020

GRANTS

Title:	Seed Funding for High-Impact Review Papers	
Funder:	Purdue University	
Duration:	2024–2025	
People:	Inez Hua (PI), Yi Ding (Co-PI)	
Awarded:	\$10,000 (My share: 50%)	
Title:	Conference: DESC: Type III: A Holistic AI Computing Framework: Incorporating the Water and Biodiversity Dimensions of Sustainability	
Funder:	NSF	
Duration:	2024–2026	
People:	Inez Hua (PI), Yi Ding (Co-PI)	
Awarded:	\$9,9992 (My share: 50%)	
Title:	Computing Innovation Fellows 2020 Project	
Funder:	NSF	
Duration:	2020–2023	
People:	Michael Carbin (PI), Yi Ding	
Awarded:	\$295,704	
Title:	Meta Research Award on Statistics for Improving Insights, Models, & Decisions	
Funder:	Meta	
Duration:	2021–2022	
People:	Michael Carbin (PI), Yi Ding	
Awarded:	\$46,000	

TEACHING

Instructor, Purdue University, West Lafayette, IN

Python for Data Science (ECE 20875)	Spring 2026
Machine Learning in Cloud Computing (ECE 69500)	Fall 2025
Python for Data Science (ECE 20875)	Spring 2025
Machine Learning in Cloud Computing (ECE 69500)	Fall 2024
Python for Data Science (ECE 20875)	Spring 2024
Python for Data Science (ECE 20875)	Fall 2023

Teaching Assistant, University of Chicago, Chicago, IL

Machine Learning and Large Scale Data Analysis (CMSC 25025)	Spring 2017
Machine Learning (CMSC 25400)	Winter 2017
Machine Learning (MPCS 53111)	Spring 2016
Machine Learning for Public Policy (CAPP 30255)	Winter 2016

PROFESSIONAL SERVICE

Organizer

NSF Workshop on Sustainable Computing: AI, Water, and Biodiversity, Co-Chair	Aug. 2024
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Invited Participant

CRA Career Mentoring Workshop	Feb. 2026
DOE/AFOSR Energy Consequences of Information Workshop	Feb. 2026
Indiana Water Summit	Aug. 2025
CCC Computing Futures Symposium	May 2025
CIFellows 2025 Symposium	May 2025
Dagstuhl Perspectives Workshop: Climate Change: What is Computing's Responsibility?	Mar. 2025

NSF Workshop on Sustainable Computing for Sustainability
NITRD 30th Anniversary Symposium
CIFellows 2022 Workshop

Apr. 2024
May 2022
May 2022

Program Committee

IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS)	2026
ACM International Conference on Future and Sustainable Energy Systems (e-Energy)	2026
ACM International Conference on Architectural Support for PL and OS (ASPLOS)	2026
IEEE Computer Architecture Letters (CAL)	2025
ACM Workshop on Sustainable Computer Systems (HotCarbon)	2025
SIGOPS Asia-Pacific Workshop on Systems (APSys)	2025
IEEE/ACM International Symposium on Computer Architecture (ISCA)	2025
IEEE International Symposium on High-Performance Computer Architecture (HPCA)	2025
USENIX Annual Technical Conference (ATC)	2024
Conference on Systems and Machine Learning (MLSys)	2024
ACM Student Research Competition at PACT	2023
ACM SPLASH Onward!	2022
Conference on Systems and Machine Learning (MLSys)	2022
ACM Asia-Pacific Workshop on Systems	2022
Journal of Systems Research	2022

Technical Reviewing

Neural Information Processing Systems (NeurIPS)	2022
International Conference on Learning Representations (ICLR)	2022
International Conference on Machine Learning (ICML)	2022
Neural Information Processing Systems (NeurIPS)	2021
AAAI Conference on Artificial Intelligence (AAAI)	2021
AAAI Conference on Artificial Intelligence (AAAI)	2020
Neural Information Processing Systems (NeurIPS)	2019
International Conference on Machine Learning (ICML)	2019

PRESENTATIONS

Invited Seminars

Systematic Characterization of LLM Quantization: A Performance, Energy, and Quality Perspective	
DOE/AFOSR Energy Consequences of Information Workshop	Feb. 2026
Not All Water Consumption Is Equal: A Water Stress Weighted Metric for Sustainable Computing	
Green Software Foundation, Virtual	Sep. 2025
Not All Water Consumption Is Equal: An AI, Datacenter, and Semiconductor Perspective	
Indiana Water Summit, Indianapolis, USA	Aug. 2025

Towards Sustainable Next Generation AI and Cloud Systems

Meta, Sunnyvale, USA	Sep. 2024
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A Holistic View on Machine Learning for Systems

University of Waterloo, Department of Computer Science	Jun. 2023
Microsoft Research	Apr. 2023
Texas A&M University, Department of Computer Science & Engineering	Apr. 2023
University of Southern California, Department of Electrical & Computer Engineering	Apr. 2023
University of Illinois, Department of Computer Science	Mar. 2023
Cornell Tech, Department of Electrical & Computer Engineering	Mar. 2023
Washington University in St. Louis, Department of Computer Science & Engineering	Mar. 2023
Purdue University, School of Electrical & Computer Engineering	Mar. 2023
Purdue University, Department of Computer Science	Mar. 2023
Virginia Tech, Department of Computer Science	Mar. 2023
Indiana University Bloomington, Department of Computer Science	Feb. 2023

University of Colorado Boulder, Department of Computer Science
University of Massachusetts Amherst, College of Information and Computer Sciences

Feb. 2023
Feb. 2023

Conference Presentations

Sustainable LLM Serving: Environmental Implications, Challenges, and Opportunities		Feb. 2023
Conference presentation at IGSC, Austin, USA		Feb. 2023
Uncertainty-Aware Decarbonization for Datacenters		Oct. 2024
Conference presentation at HotCarbon, Santa Cruz, USA		Oct. 2024
Uncertainty-Aware Carbon Optimization in Cloud Computing		Jul. 2024
Conference presentation at SoDec Workshop at E-Energy, Singapore		Jun. 2024
NURD: Negative-Unlabeled Learning for Online Datacenter Straggler Prediction		Aug. 2022
Conference presentation at MLSys, Santa Clara, USA		Aug. 2022
Predictable Maintenance Job Planning in Datacenters		Aug. 2022
Meta Infrastructure Data Science Faculty Workshop at KDD, DC, USA		Aug. 2022
Generalizable and Interpretable Learning for Configuration Extrapolation		Nov. 2021
Conference presentation at ESEC/FSE, Virtual		Nov. 2021
Dynamical Systems Theory for Causal Inference with Application to Synthetic Controls		Nov. 2020
Causal Data Science Meeting, Virtual		Nov. 2020
Conference presentation at AISTATS, Virtual		Aug. 2020
Generative and Multi-phase Learning for Computer Systems Optimization		Jun. 2019
Conference presentation at ISCA, Phoenix, USA		Jun. 2019
Multiresolution Kernel Approximation for Gaussian Process Regression		Dec. 2017
Conference presentation at NeurIPS, Long Beach, USA		Dec. 2017
Large Scale Kernel Methods for Online AUC Maximization		Nov. 2017
Conference presentation at ICDM, New Orleans, USA		Nov. 2017
An Adaptive Gradient Method for Online AUC Maximization		Jan. 2015
Conference presentation at AAAI, Austin, USA		Jan. 2015

MEDIA COVERAGE

- How to make data centers less thirsty. 11/24/2025
Purdue ECE research reveals how computing impacts global biodiversity. 10/15/2025
Economic boom or environmental disaster? Rural Texas grapples with pros, cons of data centers. 10/2/2025
Data centers are thirsty for Texas' water, but state planners don't know how much they will need. 9/25/2025
Spain's data centre law: supporting local groups in the public consultation. 9/16/2025
Big Tech's big thirst — AI's demand for Texas water. 8/15/2025
Companies focus on ways of achieving energy efficiency as consumption keeps increasing. 7/15/2025
Tech Giants Scramble To Meet AI's Looming Energy Crisis. 7/14/2025

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