

YI DING

BHEE 336, 465 Northwestern Ave ◊ West Lafayette, IN 47907, USA
Email: yiding@purdue.edu ◊ Website: www.y-ding.github.io

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 fur 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.

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 Postdoctoral Fellowship
Funder: NSF
Duration: 2020–2023
People: Yi Ding
Awarded: \$295,704
- Title: Meta Research Award on Statistics for Improving Insights, Models, and Decisions
Funder: Meta
Duration: 2021–2022
People: Michael Carbin (PI), Yi Ding
Awarded: \$46,000

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– |

PhD Thesis Committee

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

Master Students

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| Hyunji Kim, MIT | 2021–2022 |
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Undergraduate Students

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| 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) | Spring 2024 |
| Sophia Nguyen, University of Waterloo (One HotCarbon'24 paper published) | Spring 2024 |
| Avinash Rao, University of Chicago (One MLSys'22 paper published) | 2019–2020 |

TEACHING**Instructor, Purdue University, West Lafayette, IN**

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|---|-------------|
| 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**

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

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| 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 | Apr. 2024 |

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| NITRD 30th Anniversary Symposium | May 2022 |
| CIFellows 2022 Workshop | May 2022 |

Program Committee

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| 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

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|---|------|
| 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

| | |
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| Systematic Characterization of LLM Quantization: A Performance, Energy, and Quality Perspective | |
| DOE/AFOSR Energy Consequences of Information Workshop | Feb. 2026 |

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| Not All Water Consumption Is Equal: A Water Stress Weighted Metric for Sustainable Computing | |
| Green Software Foundation, Virtual | Sep. 2025 |

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|---|-----------|
| Not All Water Consumption Is Equal: An AI, Datacenter, and Semiconductor Perspective | |
| Indiana Water Summit, Indianapolis, USA | Aug. 2025 |

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| 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

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| 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

- The Hidden Cost of AI: Making Data Centers Sustainable. 1/21/2026
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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