

# 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

Google Scholar; Underline Students advised by me; \* Equal contribution; † Corresponding faculty author

[J1] Tianyao Shi\*, Yanran Wu\*, Sihang Liu, and **Yi Ding**†. “Disaggregated Speculative Decoding for Carbon-Efficient LLM Serving.” *IEEE Computer Architecture Letters (CAL)*, 2025.

[C2] 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.

[C3] 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.

[C4] 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.

- [C5] Leyi Yan, Linda Wang, Sihang Liu, and **Yi Ding**<sup>†</sup>. “EnsembleCI: Ensemble Learning for Carbon Intensity Forecasting.” *The 16th ACM International Conference on Future Energy Systems (e-Energy)*, 2025.
- [C6] Meghna Roy Chowdhury, Wei Xuan, Sheyres Sen, Yixue Zhao, and **Yi Ding**<sup>†</sup>. “Predicting and Understanding College Student Mental Health with Interpretable Machine Learning.” *IEEE/ACM Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE)*, 2025.
- [C7] 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.
- [C8] Meghna Roy Chowdhury, **Yi Ding**, and Sheyres 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.
- [C9] **Yi Ding**<sup>†</sup> and Tianyao Shi. “Sustainable LLM Serving: Environmental Implications, Challenges, and Opportunities.” *The 15th International Green and Sustainable Computing Conference (IGSC)*, 2024.
- [C10] Amy Li, Sihang Liu, and **Yi Ding**<sup>†</sup>. “Uncertainty-Aware Decarbonization for Datacenters.” *The 3rd Workshop on Sustainable Computer Systems (HotCarbon) and ACM SIGENERGY Energy Informatics Review (EIR)*, 2024.
- [C11] 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.
- [C12] 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 (ASPLOS)*, 2023.  
2023 Innovation Award, Quantum Computing for Drug Discovery Challenge at ICCAD.
- [C13] 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.
- [J14] Guillaume Basse, **Yi Ding**, and Panos Toulis. “Minimax Designs for Causal Effects in Temporal Experiments with Treatment Habituation.” *Biometrika*, 2023.
- [C15] **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.
- [C16] **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.
- [C17] 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.
- [J18] 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.
- [C19] **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.
- [C20] Ming Gao, **Yi Ding**, and Bryon Aragam. A Polynomial-Time Algorithm for Learning Nonparametric Causal Graphs.” *Advances in Neural Information Processing Systems (NeurIPS)*, 2020.
- [C21] **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.

- [C22] **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.
- [C23] **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.
- [C24] **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.
- [C25] 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

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### 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– |
| Meghna Roy Chowdhury (ECE, co-advise with Shreyas Sen), Purdue University | Fall 2021– |

### PhD Thesis Committee

|                                    |            |
|------------------------------------|------------|
| Zhuoli Yin (IE), Purdue University | Fall 2021– |
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### Master Students

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

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| 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   |

## GRANTS

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|            |  |
|------------|--|
| 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%)   |
| <br>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

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### Instructor, Purdue University, West Lafayette, IN

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

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### Organizer

NSF Workshop on Sustainable Computing: AI, Water, and Biodiversity, Co-Chair

Aug. 2024

### Invited Participant

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

NITRD 30th Anniversary Symposium

May 2022

CIFellows 2022 Workshop

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 |

## MEDIA COVERAGE

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- 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

## PRESENTATIONS

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### Invited Seminars

**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

**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 Feb. 2023  
University of Massachusetts Amherst, College of Information and Computer Sciences Feb. 2023

### Conference Presentations

**Sustainable LLM Serving: Environmental Implications, Challenges, and Opportunities**  
Conference presentation at IGSC, Austin, USA Oct. 2024

**Uncertainty-Aware Decarbonization for Datacenters**  
Conference presentation at HotCarbon, Santa Cruz, USA Jul. 2024

**Uncertainty-Aware Carbon Optimization in Cloud Computing**  
Conference presentation at SoDec Workshop at E-Energy, Singapore Jun. 2024

**NURD: Negative-Unlabeled Learning for Online Datacenter Straggler Prediction**  
Conference presentation at MLSys, Santa Clara, USA Aug. 2022

**Predictable Maintenance Job Planning in Datacenters**  
Meta Infrastructure Data Science Faculty Workshop at KDD, DC, USA Aug. 2022

**Generalizable and Interpretable Learning for Configuration Extrapolation**

Conference presentation at ESEC/FSE, Virtual

Nov. 2021

**Dynamical Systems Theory for Causal Inference with Application to Synthetic Controls**

Causal Data Science Meeting, Virtual

Nov. 2020

Conference presentation at AISTATS, Virtual

Aug. 2020

**Generative and Multi-phase Learning for Computer Systems Optimization**

Conference presentation at ISCA, Phoenix, USA

Jun. 2019

**Multiresolution Kernel Approximation for Gaussian Process Regression**

Conference presentation at NeurIPS, Long Beach, USA

Dec. 2017

**Large Scale Kernel Methods for Online AUC Maximization**

Conference presentation at ICDM, New Orleans, USA

Nov. 2017

**An Adaptive Gradient Method for Online AUC Maximization**

Conference presentation at AAAI, Austin, USA

Jan. 2015

*Last updated November 15, 2025*