

# YI DING

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## RESEARCH INTERESTS

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AI/ML Systems, Sustainable Computing, Datacenter Computing, Healthcare

## PROFESSIONAL EXPERIENCE

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<b>Purdue University</b> Assistant Professor in Elmore Family School of Electrical and Computer Engineering PI, STYLE (SusTainable computing sYstems and LEarning) Lab	West Lafayette, IN, USA 8/2023 – Present
<b>Massachusetts Institute of Technology</b> Postdoctoral Associate & NSF Computing Innovation Fellow. Mentor: Michael Carbin	Cambridge, MA, USA 1/2021 – 8/2023
<b>Meta</b> Visiting Researcher	Cambridge, MA, USA 10/2021–12/2022
<b>Google</b> Research Intern	Sunnyvale, CA, USA 6/2019–9/2019

## EDUCATION

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<b>University of Chicago</b> Ph.D. & MS in Computer Science. Advisor: Henry Hoffmann	Chicago, IL, USA 8/2015 – 12/2020
<b>Nanyang Technological University</b> Ph.D. Candidate in Computer Science. Passed Qualification Exam.	Singapore 7/2013 – 7/2015
<b>Beijing Jiaotong University</b> B.E. in Electronic Science and Technology. Graduated with Highest Honor.	Beijing, China 9/2008 – 6/2012

## SELECTED AWARDS AND HONORS

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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 AND PRESENTATIONS

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 [Google Scholar](#)

† Students mentored by me; ★ Equal contribution; ‡ Corresponding faculty author

### Peer-reviewed Conference Proceedings

- [C1] **Yi Ding**<sup>†</sup> and Tianyao Shi<sup>†</sup>. “Sustainable LLM Serving: Environmental Implications, Challenges, and Opportunities”. In: *Proceedings of the 15th International Green and Sustainable Computing Conference (IGSC)*. 2024.
- [C2] Amy Li<sup>†</sup>, Sihang Liu, and **Yi Ding**<sup>‡</sup>. “Uncertainty-Aware Decarbonization for Datacenters”. In: *The 3rd Workshop on Sustainable Computer Systems (HotCarbon)*. 2024.  
- [Also accepted for publication in ACM SIGENERGY Energy Informatics Review \(EIR\)](#).
- [C3] Sophia Nguyen<sup>★,†</sup>, Beihao Zhou<sup>★,†</sup>, **Yi Ding**, and Sihang Liu. “Towards Sustainable Large Language Model Serving”. In: *The 3rd Workshop on Sustainable Computer Systems (HotCarbon)*. 2024.  
- [Also accepted for publication in ACM SIGENERGY Energy Informatics Review \(EIR\)](#).

- [C4] 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”. In: *Proceedings of 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](#).
- [C5] Alex Renda, **Yi Ding**, and Michael Carbin. “Turaco: Complexity-Guided Data Sampling for Training Neural Surrogates of Programs”. In: *Proceedings of the ACM on Programming Languages (OOPSLA)*. 2023.
- [C6] **Yi Ding**, Avinash Rao<sup>†</sup>, Hyebin Song, Rebecca Willett, and Henry Hoffmann. “NURD: Negative-Unlabeled Learning for Online Datacenter Straggler Prediction”. In: *Proceedings of Machine Learning and Systems (MLSys)*. 2022.
- [C7] **Yi Ding**, Ahsan Pervaiz, Michael Carbin, and Henry Hoffmann. “Generalizable and interpretable learning for configuration extrapolation”. In: *Proceedings of the 29th ACM Joint Meeting on European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)*. 2021.
- [C8] Alex Renda, **Yi Ding**, and Michael Carbin. “Programming with neural surrogates of programs”. In: *Proceedings of the 2021 ACM SIGPLAN International Symposium on New Ideas, New Paradigms, and Reflections on Programming and Software (Onward!)* 2021.
- [C9] **Yi Ding** and Panos Toulis. “Dynamical systems theory for causal inference with application to synthetic control methods”. In: *International Conference on Artificial Intelligence and Statistics (AISTATS)*. 2020.
- [C10] Ming Gao, **Yi Ding**, and Bryon Aragam. “A polynomial-time algorithm for learning nonparametric causal graphs”. In: *Advances in Neural Information Processing Systems (NeurIPS)*. 2020.
- [C11] **Yi Ding**, Nikita Mishra, and Henry Hoffmann. “Generative and multi-phase learning for computer systems optimization”. In: *Proceedings of the 46th International Symposium on Computer Architecture (ISCA)*. 2019.
- [C12] **Yi Ding**, Risi Kondor, and Jonathan Eskreis-Winkler. “Multiresolution kernel approximation for Gaussian process regression”. In: *Advances in Neural Information Processing Systems (NeurIPS)*. 2017.  
- [Spotlight, top 4% submissions](#).
- [C13] **Yi Ding**, Chenghao Liu, Peilin Zhao, and Steven CH Hoi. “Large scale kernel methods for online auc maximization”. In: *2017 IEEE International Conference on Data Mining (ICDM)*. 2017.  
- [Long oral, top 8% submissions](#).
- [C14] **Yi Ding**, Peilin Zhao, Steven Hoi, and Yew-Soon Ong. “An adaptive gradient method for online auc maximization”. In: *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*. 2015.  
- [Oral, top 10% submissions](#).
- [C15] Pengcheng Wu, **Yi Ding**, Peilin Zhao, Chunyan Miao, and Steven Hoi. “Learning relative similarity by stochastic dual coordinate ascent”. In: *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*. 2014.

## Peer-reviewed Journals

- [J1] Guillaume Basse, **Yi Ding**, and Panos Toulis. “Minimax designs for causal effects in temporal experiments with treatment habituation”. In: *Biometrika*. 2023.  
- [One of the top journals in statistics](#).
- [J2] Kathryn E Schertz, James Saxon, Carlos Cardenas-Iniguez, Luís Bettencourt, **Yi Ding**, Henry Hoffmann, and Marc G Berman. “Neighborhood street activity and greenspace usage uniquely contribute to predicting crime”. In: *Npj Urban Sustainability*. 2021.

## Workshop Presentations

- [W1] **Yi Ding**, Avinash Rao, and Henry Hoffmann. “Causal and Interpretable Learning for Datacenter Latency Prediction”. In: *Women in Machine Learning Workshop co-located with NeurIPS (WiML)* (2020).
- [W2] Ming Gao, **Yi Ding**, and Bryon Aragam. “A Polynomial-time Algorithm for Learning Nonparametric Causal Graphs”. In: *Women in Machine Learning Workshop co-located with NeurIPS (WiML)* (2020).

- [W3] Guillaume Basse, **Yi Ding**, and Panos Toulis. “Minimax Crossover Designs for Digital Experimentation”. In: *Conference on Digital Experimentation at MIT (CODE@MIT)* (2019).
- [W4] **Yi Ding**, Guillaume Basse, and Panos Toulis. “Minimax Crossover Designs”. In: *NeurIPS Workshop on “Do the right thing”: machine learning and causal inference for improved decision making (CausalML)* (2019).
- [W5] **Yi Ding**, Nikita Mishra, and Henry Hoffmann. “Generative and Multi-phase Learning for Computer Systems Optimization”. In: *Women in Machine Learning Workshop co-located with NeurIPS (WiML)* (2019).
- [W6] **Yi Ding** and Panos Toulis. “Nonparametric Causal Inference in Dynamical Systems with Synthetic Controls”. In: *Women in Machine Learning Workshop co-located with NeurIPS (WiML)* (2018).

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## RESEARCH ADVISING

### PhD Students

Tianyao Shi, Purdue University	Fall 2024–
Yanran Wu, Purdue University	Fall 2023–

### Master Students

Ashutosh Sharma, UIUC	Spring 2024–Fall 2024
Hyunji Kim, MIT	2021–2022

### Undergraduate Students

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 <b>1st Place</b> in Research Talk in CoE at Fall 2024 Undergrad Research Expo	
Sarah Deniz, Purdue University (DUIRI, awarded \$1,000 fellowship)	Fall 2024
Yutao Han, University of Waterloo	Fall 2024
Leyi Yan, University of Waterloo	Fall 2024
Linda Wang, University of Waterloo	Fall 2024
Zihan Pan, University of Waterloo	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

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## 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:	2024–2025
People:	Inez Hua (PI), Yi Ding (Co-PI)
Awarded:	\$9,992 (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 (Co-PI)  
Awarded: \$46,000

## TEACHING

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

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	2024
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### **Program Committee**

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
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

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### **Invited Seminars**

#### **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	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 January 12, 2025*