YI DING

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RESEARCH INTERESTS

Sustainable Computing, Machine Learning for Systems, Datacenter Computing, Causal Inference

PROFESSIONAL EXPERIENCE

Purdue University — West Lafayette, IN, USA
Assistant Professor in Elmore Family School of Electrical and Computer Engineering — 8/2023 – Present
PI, STYLE (**S**us**T**ainable computing s**Y**stems and **LE**arning) Lab

Massachusetts Institute of Technology — Cambridge, MA, USA
Postdoctoral Associate & NSF Computing Innovation Fellow. Mentor: Michael Carbin — 1/2021 – 8/2023

Meta — Cambridge, MA, USA
Visiting Researcher — 10/2021–12/2022

Google — Sunnyvale, CA, USA
Research Intern — 6/2019–9/2019

EDUCATION

University of Chicago — Chicago, IL, USA
Ph.D. & MS in Computer Science. Advisor: Henry Hoffmann — 8/2015 – 12/2020

Nanyang Technological University — Singapore
Doctoral Student in Computer Science. Passed Qualification Exam. — 7/2013 – 7/2015

Beijing Jiaotong University — Beijing, China
B.E. in Electronic Science and Technology. Graduated with Highest Honor. — 9/2008 – 6/2012

SELECTED AWARDS AND HONORS

CRA/CCC/NSF Computing Innovation Fellowship — 2020-2023
Meta Research Award — 2021
EECS Rising Stars at UC Berkeley — 2020

PUBLICATIONS

Turaco: Complexity-Guided Data Sampling for Training Neural Surrogates of Programs
Alex Renda, Yi Ding, Michael Carbin
*ACM SIGPLAN conference on Systems, Programming, Languages, and Applications (***OOPSLA***)*, 2023

CAFQA: A Classical Simulation Bootstrap for Variational Quantum Algorithms
Gokul Ravi, Pranav Gokhale, Yi Ding, William M. Kirby, Kaitlin N. Smith, Jonathan M. Baker, Peter J. Love, Henry Hoffmann, Kenneth R. Brown, Frederic T. Chong
*ACM International Conference on Architectural Support for Programming Languages and Operating Systems (***ASPLOS***)*, 2023

Minimax Designs for Causal Effects in Temporal Experiments with Treatment Habituation
Guillaume Basse, Yi Ding, Panos Toulis
Biometrika, (Top theoretical statistics journal), 2023

NURD: Negative-Unlabeled Learning for Online Datacenter Straggler Prediction
Yi Ding, Avinash Rao, Hyebin Song, Rebecca Willett, Henry Hoffmann
*Conference on Machine Learning and Systems (***MLSys***)*, 2022

Generalizable and Interpretable Learning for Configuration Extrapolation
Yi Ding, Ahsan Pervaiz, Michael Carbin, Henry Hoffmann.

*ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (***ESEC/FSE***)*, 2021

Programming with Neural Surrogates of Programs
Alex Renda, Yi Ding, Michael Carbin
*ACM SIGPLAN International Symp. on New Ideas, New Paradigms, and Reflections on Programming and Software (***Onward!***)*, 2021

Neighborhood Street Activity and Greenspace Usage Uniquely Contribute to Predicting Crime
Kathryn Schertz, James Saxon, Carlos Cardenas-Iniguez, Luís Bettencourt, Yi Ding, Henry Hoffmann, Marc G Berman
npj Urban Sustainability, Nature Research Journal, 2021

Dynamical Systems Theory for Causal Inference with Application to Synthetic Control Methods
Yi Ding, Panos Toulis
*International Conference on Artificial Intelligence and Statistics (***AISTATS***)*, 2020

A Polynomial-time Algorithm for Learning Nonparametric Causal Graphs
Ming Gao, Yi Ding, Bryon Aragam
*Advances in Neural Information Processing Systems (***NeurIPS***)*, 2020

Generative and Multi-phase Learning for Computer Systems Optimization
Yi Ding, Nikita Mishra, Henry Hoffmann
*International Symposium on Computer Architecture (***ISCA***)*, 2019

Multiresolution Kernel Approximation for Gaussian Process Regression
Yi Ding, Risi Kondor, Jonathan Eskreis-Winkler
*Advances in Neural Information Processing Systems (***NeurIPS***)*, 2017 (**Spotlight**)

Large Scale Kernel Methods for Online AUC Maximization
Yi Ding, Chenghao Liu, Peilin Zhao, Steven CH Hoi
*IEEE International Conference on Data Mining (***ICDM***)*, 2017 (**Long Oral**)

An Adaptive Gradient Method for Online AUC Maximization
Yi Ding, Peilin Zhao, Steven CH Hoi, Yew-Soon Ong
*AAAI Conference on Artificial Intelligence (***AAAI***)*, 2015 (**Oral**)

Learning Relative Similarity by Stochastic Dual Coordinate Ascent
Pengcheng Wu, Yi Ding, Peilin Zhao, Chunyan Miao, Steven CH Hoi
*AAAI Conference on Artificial Intelligence (***AAAI***)*, 2014

WORKSHOP CONTRIBUTIONS

Causal and Interpretable Learning for Datacenter Latency Prediction
Yi Ding, Avinash Rao, Henry Hoffmann
*Women in Machine Learning Workshop co-located with NeurIPS (***WiML***)*, 2020

A Polynomial-time Algorithm for Learning Nonparametric Causal Graphs
Ming Gao, Yi Ding, Bryon Aragam
*Women in Machine Learning Workshop co-located with NeurIPS (***WiML***)*, 2020

Minimax Crossover Designs
Yi Ding, Guillaume Basse, Panos Toulis
*NeurIPS Workshop on "Do the right thing": machine learning and causal inference for improved decision making (***CausalML***)*, 2019

Minimax Crossover Designs for Digital Experimentation
Guillaume Basse, Yi Ding, Panos Toulis
*Conference on Digital Experimentation at MIT (***CODE@MIT***)*, 2019

Generative and Multi–phase Learning for Computer Systems Optimization
Yi Ding, Nikita Mishra, Henry Hoffmann
*Women in Machine Learning Workshop co-located with NeurIPS (***WiML***)*, 2019

Nonparametric Causal Inference in Dynamical Systems with Synthetic Controls
Yi Ding, Panos Toulis
*Women in Machine Learning Workshop co-located with NeurIPS (***WiML***)*, 2018

PROFESSIONAL SERVICE

Program Committee

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

RESEARCH ADVISING

PhD Students

Tianyao Shi, Purdue	2024–
Zachary Gou, Purdue	2024–

Master Students

Hyunji Kim, MIT, Current: Strip	2021–2022

Undergraduate Students

Avinash Rao, University of Chicago, Current: Goldman Sachs	2019–2020

GRANTS

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
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 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

INVITED TALKS

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

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

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