YI DING

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RESEARCH INTERESTS

Machine Learning for Systems, Computer Architecture, Cloud Computing, Sustainability, Causal Inference

PROFESSIONAL EXPERIENCE

Purdue University — West Lafayette, IN, USA
Assistant Professor in Elmore Family School of Electrical and Computer Engineering — 8/2023 – Present

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

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

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

Master

Hyunji Kim, MIT 2021–2022
Current: Strip

Undergraduate

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

GRANTS

Title: **Computing Innovation Fellows 2020 Project**
Funder: NSF
Duration: 2020–2023
People: Michael Carbin (PI), Yi Ding
Awarded: $295,704

Title: **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) 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	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
Xiapeisu Youth Forum at ICT, Chinese Academy Of Sciences, Virtual Sep. 2020
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

EQUITY, DIVERSITY, AND INCLUSION

Prime Minister of PhD Student Representatives in UChicago CS 2018–2020
Acted as the primary interface between faculty and PhD students and responsible for handling faculty-grad interactions and concerns to improve departmental equity and inclusion.

Co-chair of Graduate Women in UChicago CS (GWiCS) 2018–2019
Managed funding for events that foster a community of peer mentorship, which have been attended by 75% of the female PhD students. Also advocated for better department-wide dissemination of resources for female-identifying graduate students.

REFERENCES

Michael Carbin
Associate Professor
Electrical Engineering and Computer Science
Massachusetts Institute of Technology
Email: mcarbin@csail.mit.edu

Henry Hoffmann
Professor
Computer Science
University of Chicago
Email: hankhoffmann@cs.uchicago.edu

Benjamin C. Lee
Professor
School of Engineering and Applied Science
University of Pennsylvania
Email: leebcc@seas.upenn.edu

Frederic T. Chong
Seymour Goodman Professor
Computer Science
University of Chicago
Email: chong@cs.uchicago.edu

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