

YI DING

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RESEARCH INTERESTS

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

PROFESSIONAL EXPERIENCE

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| Purdue University Assistant Professor in Elmore Family School of Electrical and Computer Engineering | 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

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| University of Chicago Ph.D. & MS in Computer Science. Advisor: Henry Hoffmann | Chicago, IL, USA 8/2015 – 12/2020 |
| Nanyang Technological University Doctoral Student in Computer Science. Passed Qualification Exam. | Singapore 7/2013 – 7/2015 |
| Beijing Jiaotong University 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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| CRA/CCC/NSF Computing Innovation Fellowship Research Proposal: Improving System Efficiency and Reliability with Causal Learning | 2020-2023 |
| Meta Research Award On Statistics for Improving Insights, Models, and Decisions. | 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**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**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**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

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| 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 |

RESEARCH ADVISING

Master

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|-------------------------|-----------|
| Hyunji Kim , MIT | 2021–2022 |
| Current: Strip | |

Undergraduate

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

GRANTS

Title: **Computing Innovation Fellows 2020 Project**
Funder: NSF
Duration: 2022–2023
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

Teaching Assistant, University of Chicago, Chicago, IL

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| 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

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| 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 |

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| 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 | |
| Xiaopeisu 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

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| 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

Benjamin C. Lee

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

Henry Hoffmann

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

Frederic T. Chong

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