Tiffany Ding

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Education

University of California, Berkeley — **Berkeley, CA**
Ph.D. Candidate, Statistics — *2021 – Present*
Advisors: Michael I. Jordan and Ryan J. Tibshirani

Brown University — **Providence, RI**
Master of Science, Computer Science — *2020 – 2021*
Advisor: Stephen Bach

Brown University — **Providence, RI**
Bachelor of Science, Applied Math — *2017 – 2021*
GPA: 4.0, magna cum laude

Publications

[1] N. Ananthakrishnan*, **T. Ding***, M Werner*, S. P. Karimeddy, and M. I. Jordan. Privacy can arise endogenously in an economic system with learning agents. *Foundations of Responsible Computing*, 2024.

[2] **T. Ding**, A. N. Angelopoulos, S. Bates, M. I. Jordan, and R. J. Tibshirani. Class-conditional conformal prediction with many classes. *Neural Information Processing Systems (NeurIPS)*, 2023.

[3] P. Yu, **T. Ding**, and S. H. Bach. Learning from multiple noisy partial labelers. *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2022.

[4] **T. Ding***, S. Kumar*, and S. Shaw*. A seabird population model to evaluate plastic pollution policies. *The UMAP Journal of Undergraduate Mathematics and Its Applications*, 41(3), 2020.

[5] **T. Ding** and E.S. Chen. Mining drugs and indications for suicide-related adverse events. In *AMIA Annual Symposium Proceedings*, volume 2019. American Medical Informatics Association, 2019.

*equal contribution

Experience

University of California, Berkeley — **Berkeley, CA**
Graduate Student Researcher — *Aug 2021 – Present*
- Ongoing research in uncertainty quantification (e.g., conformal prediction); calibration in ML pipelines; learning in the presence of distribution shift; human-AI collaboration

Research

Brown University, Dept. of Computer Science — **Providence, RI**
Master's Project — *Mar 2020 – May 2021*

Advisor: Stephen Bach

- Designed method for performing weakly supervised machine learning in non-stationary environments by leveraging ideas from Bayesian changepoint detection.
- Implemented method using Python and Stan and performed evaluation on real and synthetic data sets.
- Developed a proof of generic identifiability for a generative model of multi-class labels from multiple labeling sources.

Brown University, Dept. of Applied Math **Providence, RI**
Honors Thesis *Jan 2020 – May 2022*
Advisor: Charles (Chip) Lawrence

- Developed method that leverages Gaussian processes and state space models to infer historical sea levels using geological proxies.

Brown Center for Biomedical Informatics **Providence, RI**
Undergraduate Researcher *Sep 2018 – Jan 2020*
Advisor: Elizabeth Chen

- Used Python to create predictive models for suicide risk and compared performance of various data oversampling techniques.
- Applied association rule learning to FDA data using Julia to discover drug-drug interactions that increase suicide risk.

Brown University, Dept. of Economics **Providence, RI**
Research Assistant *Sep 2019 – Dec 2019*
Advisor: Emily Oster

- Summarized key findings of hundreds of scientific papers related to biology and public health.
- Performed preliminary steps of meta-analysis by calculating standardized mean difference using results of published studies.

Industry

Johns Hopkins University Applied Physics Laboratory **Remote**
Machine Learning Research Intern *Summer 2020, Winter 2021*

- Adapted contrastive learning methods to object detection setting and developed prototype model by combining ideas from YOLOv4 (Bochkovskiy et al., 2020) and BYOL (Grill et al., 2020).
- Trained and applied calibration methods to improve estimates of object detector uncertainty.
- Designed algorithm to apply hierarchical classification methods to object tracking setting and improved accuracy by 13% compared to baseline methods.
- Collaborated with other interns to develop heuristic-based algorithm for device deduplication using WiFi access data.

Facebook, Inc. **Menlo Park, CA**
Data Science Intern *Summer 2019*

- Conducted analyses on large datasets using SQL, Python, and Excel and created useful metrics and data visualizations.
- Effectively communicated findings through write-ups and presentations to team members and other interns.

Fellowships and Awards

NSF Graduate Research Fellowship *2022-Present*
National Science Foundation

Jerome L. Stein Memorial Award for Undergraduate Excellence *May 2021*
Brown University, Dept. of Applied Math

2nd Place, East Coast Regional Datathon *Sep 2020*
Citadel and Citadel Securities

- Awarded $2,500 cash prize for identifying the optimal target audience for maximizing movie profitability.

Outstanding Paper, Interdisciplinary Contest for Modeling *Feb 2020*
Consortium for Mathematics and Its Applications

- One of 18 winners out of 7,000+ teams in international math modeling competition.

1st Place, Brown Math Contest for Modeling *Nov 2019*
Brown University, Dept. of Applied Math

Rewriting the Code Fellow *Jun 2018 – May 2021*
Rewriting the Code

Grace Hopper Scholar *Oct 2019*
AnitaB.org

Teaching Experience

Graduate Student Instructor
University of California, Berkeley

- DATA 102: Data, Inference, and Decisions (Spring 2022)

Undergraduate Teaching Assistant
Brown University

- DATA 2080: Data and Society (Spring 2021)
- DATA 1050: Data Engineering (Fall 2019)
- CSCI 0040: Introduction to Scientific Computing and Problem Solving (Spring 2019)
- CSCI 0170: Computer Science: An Integrated Introduction (Fall 2018)

Talks

1. Invited discussion on "Self-Consistent Conformal Prediction" by Lars van der Laan and Ahmed Alaa. *International Seminar on Selective Inference*. March 2024.
2. Invited talk: "Class-Conditional Conformal Prediction with Many Classes." *Alaa Lab Rising Stars Series*. February 2023. [recording][slides]

Outreach and Service

Finance and Sponsorship Chair *May 2023 – Aug 2023*
ICML 2023 WiML Un-Workshop, Women in Machine Learning

Diversity Committee Chair *Sep 2022 – Present*
Statistics Graduate Student Association, University of California, Berkeley

- Organize community-building events for women in statistics, ranging from undergraduate students to professors.

Co-organizer *Sep 2022 – Present*
Berkeley Statistics Fellowships Workshop, University of California, Berkeley

Reviewer *Jul 2022 – Present*
Transactions on Machine Learning Research

Service Committee Member *Sep 2021 – Present*
Statistics Graduate Student Association, University of California, Berkeley

Mentor *Nov 2021 – Present*
Statistics Graduate-Undergraduate Program, University of California, Berkeley

Mentor *Sep 2022 – Oct 2022*
NSF GRFP Workshop, Office of Graduate Diversity, University of California, Berkeley

Judge *Feb 2022*
ENVISION Research Competition by WiSTEM

Undergraduate President *Jun 2020 – May 2021*
Association of Women in Mathematics, Brown University

Mentor *Sep 2018 – May 2021*
Women in Science and Engineering, Brown University

Mentor *Sep 2019 – May 2021*
Women in Computer Science, Brown University

Mentor *Sep 2019 – May 2021*
Matched Advising Program for Sophomores, Brown University

Mentor *Aug 2020 – May 2021*
Rewriting the Code

Computer skills

Coding languages:
- Advanced: Python
- Intermediate: R, MATLAB, SQL, Julia
- Beginner: C, Scala, HTML/CSS, OCaml, Java

Additional Skills: TensorFlow 2.0, PyTorch, Git, bash, Stan, Tableau, Microsoft Excel, Adobe Photoshop, LaTeX

Last updated April 2024