Mayee Chen

Curriculum Vitae

Education

09/19 – **Stanford University**, *PhD in Computer Science*
- Advisor: Christopher Ré

09/15 – 06/19 **Princeton University**, *B.S.E in Operations Research and Financial Engineering (ORFE), certificate in Applications of Computing*, GPA: 3.962/4
- Graduated Summa Cum Laude
- Senior Thesis: *A Quantum Version of the Multiplicative Weights Algorithm* (recipient of the Ahmet S. Çakmak Thesis Prize)
- Thesis advisor: Elad Hazan

Research Interests

I'm interested in exploring fundamental questions behind tools in modern machine learning and using them to develop new, theoretically grounded methods. My current interests revolve around how to encode and evaluate sources of supervision and side information throughout the ML pipeline (e.g. weakly/semi/self-supervised) through both information-theoretic and geometric lenses. In particular, my work in graduate school so far has applied this interest to latent variable graphical models, distribution shift, and representations learned via contrastive losses.

Publications

- **The Details Matter: Preventing Class Collapse in Supervised Contrastive Learning**
  Mayee F. Chen*, Daniel Y. Fu*, Michael Zhang, Kayvon Fatahalian, Christopher Ré.
  In submission, 2021.
- **Mandoline: Model Evaluation under Distribution Shift**
  Mayee F. Chen*, Karan Goel*, Nimit Sohoni*, Fait Poms, Kayvon Fatahalian, and Christopher Ré.
  ICML, 2021.
- **Comparing the Value of Labeled and Unlabeled Data in Method-of-Moments Latent Variable Estimation**
  Mayee F. Chen*, Benjamin Cohen-Wang*, Steve Mussmann, Frederic Sala, and Christopher Ré.
  AISTATS, 2021.
- **Train and You'll Miss It: Interactive Model Iteration with Weak Supervision and Pre-Trained Embeddings**
  Mayee F. Chen*, Daniel Y. Fu*, Frederic Sala, Sen Wu, Ravi Teja Mullapudi, Fait Poms, Kayvon Fatahalian, and Christopher Ré.
  arXiv preprint arXiv:2006.15168, 2020.
- **Fast and Three-rious: Speeding Up Weak Supervision with Triplet Methods**
  Mayee F. Chen*, Daniel Y. Fu*, Frederic Sala, Sarah M. Hooper, Kayvon Fatahalian, and Christopher Ré.
  International Conference on Machine Learning (ICML), 2020.
- **Effect of Rotational Grazing on Plant and Animal Production**
  Mayee F. Chen and Junping Shi.
  Journal of Mathematical Biosciences and Engineering, vol. 15, no. 2. 2018.
- **Efficient GCD Computation for Big Integers on Xeon Phi Coprocessor**
  Jie Chen, William Watson, and Mayee F. Chen.
  IEEE Conference on Networking, Architecture, and Storage (NAS). 2014.

Awards and Honors

2021 NSF GRFP Honorable Mention

2019 Ahmet S. Çakmak Prize, *Princeton University*, for innovative senior thesis research.

2018 Phi Beta Kappa, *Princeton University*, one of 28 early inductees.

2017 Tau Beta Pi Engineering Honor Society, *Princeton University*

2017 Shapiro Prize for Academic Excellence, *Princeton University*, awarded to top 2-3% of the class.

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Work Experience

2016 – 19 **Grader for Computer Science Department**, *Princeton University*

- Algorithms and Data Structures (lead grader), Functional Programming, Reasoning about Computation, Introduction to Machine Learning, and Economics and Computing

06/18–08/18 **Quantitative Trading Intern**, *IMC Trading*, Chicago, IL, Fixed Income, Currencies, and Commodities Desk

- Developed strategies for trading treasury futures and options around news events
- Tested electronic mock trading frameworks and participated in options theory lessons
- Used Python pandas library to analyze pricing and trade data

05/17–08/17 **Software Engineering Intern**, *Google*, Mountain View, CA, Advertiser Platform Team

Worked on AdWords Next Overviews, frontpage data analytics for ads campaigns

- Developed a heuristic greedy RPC scheme for obtaining geographic breakdown data, reducing the CPU of AdWords Next Overviews by approximately 40% (in production)
- Developed a geographical hierarchy algorithm to cull extraneous RPCs; 10% CPU reduction (in production)
- Designed and added efficient zoom functionality for the geographical data
- Worked with asynchronous Java backend frameworks and Angular Dart frontend

05/16–08/16 **Engineering Practicum Intern**, *Google*, Mountain View, CA, Cloud/Cluster/Kernel team

Worked on an infrastructure tool for pushing configuration and data updates to services within Google

- Improved previously static UI's functionality to dynamically update tables displaying data pushes
- Added UI support for push operation RPC calls, including user authentication and push verification
- Redesigned and rewrote testing framework to include test server backend
- Wrote HTTP handlers in Go for backend development and HTML and JavaScript Closure frontend

Talks

2021 MedAI Talk Series: Correcting distribution shift in the ML model evaluation process

2021 DAWN Research Workshop: Mandoline: Model Evaluation under Distribution Shift

2020 Google x Stanford Summit: Labeled vs Unlabeled Data in Latent Variable Graphical Models

Coursework

Relevant graduate courses:

- Information Theoretic Lower Bounds in Data Science, Principles of Data-Intensive Systems, Convex Optimization II, Randomized Algorithms

Relevant undergraduate courses:

- *ORFE Courses:* Probability Theory (graduate-level course), Optimization, High Frequency Trading, Decision Modeling for Business Analytics, Monte Carlo Simulation, Strategy and Information, Financial Mathematics, Analysis of Big Data, Probability and Stochastics, Microeconomic Theory, Statistics
- *Computer Science Courses:* Optimization for Machine Learning (graduate-level seminar), Computer Networks, Operating Systems, Economics and Computing, Introduction to Machine Learning, Information Security, Human-Computer Interfaces, Neural Networks, Functional Programming, Reasoning About Computation, Programming Systems, Algorithms and Data Structures

Leadership and Activities

Reviewer for: UAI, KDD, ICML, Neurips

At Stanford University:

- CS PhD Admissions Committee (2020–)
- CS Student Applicant Support Program Volunteer (2020–)
- Graduate WiCS Mentor (2021–)
- XTRM Kpop Cover Group: dance captain (2019–), Alliance Dance Team (2019–)

At Princeton University:

- Triple 8 Dance Company: choreographer, publicity chair (2015–19)
- Kokopops Dance Group: dance captain (2017–19)
- Freshmen Advisee Interactor for School of Engineering (2017–19)

Skills

Advanced: Python, C, Java Intermediate: Go, OCaml, R, Dart Basic: Matlab, Julia

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