A. Feder Cooper

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Education

Cornell University
Ph.D. Candidate, Computer Science   2018 – present (expected 2024)
M.S., Computer Science   2021

Columbia University
B.A., Computer Science and Archaeology, Phi Beta Kappa, *summa cum laude*   2014

Research Interests

ML Systems, ML Algorithms, Accountable Systems

Papers and Manuscripts

Conferences

- **A. Feder Cooper**, Yucheng Lu, Jessica Zosa Forde, and Christopher De Sa. Hyperparameter Optimization Is Deceiving Us, and How to Stop It. Forthcoming, *NeurIPS 2021* ($< 26\%$ acceptance rate); workshop version accepted to *ICLR 2021, Workshop on Robust Machine Learning (RML)*. [arxiv | proceedings]

- **A. Feder Cooper**, Karen Levy, and Christopher De Sa. Accuracy-Efficiency Trade-Offs and Accountability in Distributed ML Systems. *EAAMO 2021*, **Contributed Talk** ($< 10\%$ of papers); workshop version accepted to *ICML '20 Workshop on Law and Machine Learning*. [arxiv | proceedings]

- **A. Feder Cooper** and Ellen Abrams. Emergent Unfairness in Algorithmic Fairness-Accuracy Trade-Off Research. *AIES 2021*, **Contributed Talk** ($< 10\%$ of papers). [arxiv | proceedings]

- Ruqi Zhang*, **A. Feder Cooper***, and Christopher De Sa (*Equal contribution, order determined by coin flip). [Asymptotically Optimal Exact Minibatch Metropolis-Hastings. *NeurIPS 2020*, **Spotlight** ($< 3\%$ of papers). [arxiv | proceedings]

- Ruqi Zhang, **A. Feder Cooper**, and Christopher De Sa. AMAGOLD: Amortized Metropolis Adjustment for Efficient Stochastic Gradient MCMC. *AISTATS 2020*. [arxiv | proceedings]

Journals

- **A. Feder Cooper** and Karen Levy. Fast or Accurate? Governing Conflicting Goals in Highly Autonomous Vehicles. Forthcoming, *Colorado Technology Law Journal*, 2022.

Workshops

- **A. Feder Cooper**, Maria Antoniak, Christopher De Sa, Marilyn Migiel and David Mimno. '*Tecnologica cosa*': Modeling Storyteller Personalities in Boccaccio's *Decameron*. Forthcoming at, *EMNLP 2021, SIGHUM Workshop on Computational Linguistics for Cultural Heritage, Social Sciences, Humanities and Literature* (**Archival**). [arxiv | proceedings]

- Jessica Zosa Forde*, **A. Feder Cooper***, Kweku Kwegyir-Aggrey, Christopher De Sa, and Michael Littman (*Equal contribution, order determined by coin flip). Model Selection's Disparate Impact in Real-World Deep Learning Applications. *ICLR 2021, Workshop on the Science and Engineering of Deep Learning (SEDL)*, **Contributed Talk**. [arxiv]

- **A. Feder Cooper**, Yucheng Lu, and Christopher De Sa. Hyperparameter Optimization Is Deceiving Us, and How to Stop It. *ICLR 2021, Workshop on Robust Machine Learning*. Conference version at *NeurIPS 2021*.

- **A. Feder Cooper**, Karen Levy, and Christopher De Sa. Regulating Accuracy-Efficiency Trade-Offs in Distributed Machine Learning Systems. *ICML '20 Workshop on Law and Machine Learning*, **Contributed Talk**. Conference version at *EAAMO 2021*. [ssrn]

- **A. Feder Cooper**. Imperfection is the Norm: A Computer Systems Perspective on IoT and Enforcement. *(Im)Perfect Enforcement Conference*, Information Society Project at Yale Law School. **Plenary Panel**. April 2019. [link]

Accepted and Withdrawn due to COVID-19

- **A. Feder Cooper**. Using Computational Tools to Identify Unexplored Storytelling Patterns in Boccaccio's *Decameron*. *The 68th Annual Meeting of the Renaissance Society of America*. March 2022 (withdrawn due to required in-person conference attendance in Dublin).

Talks

- **Hyperparameter Optimization Is Deceiving Us, and How to Stop It**. *NeurIPS 2021*. Joint work with Yucheng Lu, Jessica Zosa Forde, and Christopher De Sa. Virtual live talk due to COVID-19, scheduled for December 2021. [slides]

- **Accuracy-Efficiency Trade-Offs and Accountability in Distributed ML Systems**. *EAAMO 2021*. Joint work with Karen Levy and Christopher De Sa. Virtual live talk due to COVID-19, October 9, 2021. [slides]

- **Safely navigating scalability-reliability trade-offs in ML methods**. *ICML 2021, Women in Machine Learning (WiML) Un-Workshop*. Break-out session co-leader (with Ruqi Zhang). Virtual live talk due to COVID-19, July 2021.

- **Emergent Unfairness in Algorithmic Fairness-Accuracy Trade-Off Research**. *AIES 2021*. Joint work with Ellen Abrams. Virtual live talk due to COVID-19, May 19, 2021. [link]

- **Model Selection's Disparate Impact in Real-World Deep Learning Applications.** *ICLR 2021, SEDL Workshop*. Joint work with Jessica Zosa Forde, Kweku Kwegyir-Aggrey, Christopher De Sa, and Michael Littman. Virtual pre-recorded talk due to COVID-19, May 2021.

- Invited speaker, Professor Rangita de Silva de Alwis's *Spring Policy Lab: AI and Implicit Bias*, University of Pennsylvania Carey School of Law, April 2021.

- Featured in Professor Charles Isbell's *NeurIPS 2020 Keynote Address*: **You Can't Escape Hyperparameters and Latent Variables: Machine Learning as a Software Engineering Enterprise.** December 2020. [link]

- **AMAGOLD: Amortized Metropolis Adjustment for Efficient Stochastic Gradient MCMC.** *AISTATS 2020.* Joint work with Ruqi Zhang and Christopher De Sa. Virtual prerecorded talk due to COVID-19, August 2020. [slides]

- **Regulating Accuracy-Efficiency Trade-Offs in Distributed Machine Learning Systems.** *ICML 2020 Law and Machine Learning Workshop.* Joint work with Karen Levy and Christopher De Sa. Virtual live talk due to COVID-19, July 17, 2020. [slides]

- **Imperfection is the Norm: A Computer Systems Perspective on IoT and Enforcement**, (Im)Perfect Enforcement Conference, Information Society Project at Yale Law School, April 2019.

Graduate Awards and Honors

- Named a "Rising Star in EECS" (2021, MIT)
- Digital Life Initiative Doctoral Fellowship, Cornell Tech (2021 – 2022)
- *EAAMO* Oral Presentation ($< 10\%$ of papers), Accuracy-Efficiency Trade-Offs and Accountability in Distributed ML Systems (October 2021)
- *AIES* Oral Presentation ($< 10\%$ of papers), Emergent Unfairness in Algorithmic Fairness-Accuracy Trade-Off Research (May 2021)
- *SEDL Workshop at ICLR 2021* Oral Presentation, Model Selection's Disparate Impact in Real-World Deep Learning Applications (May, 2021)
- 3rd Place Finalist, Two Sigma PhD Diversity Fellowship (March 2021)
- Interview stage, OpenPhil AI PhD Fellowship (March 2021)
- *NeurIPS* Spotlight ($< 3\%$ of papers), Asymptotically Optimal Exact Minibatch Metropolis-Hastings (2020)
- Cornell University Fellowship (2018 – 2019)

Teaching

- TA, CS5150: Software Engineering | Cornell University, Spring 2019 and Spring 2020
- TA, CS6787: Advanced Machine Learning Systems | Cornell University, Fall 2018

Working Groups and Lab Membership

Relax ML Lab   Cornell University, Fall 2018 – present

- Led by Professor Christopher De Sa (Computer Science), the lab focuses on various techniques for *relaxing* accuracy to increase efficiency in machine learning algorithms and systems.

Artificial Intelligence Policy and Practice (AIPP)   Cornell University, Fall 2018 – present

- Interdisciplinary, MacArthur Foundation-funded initiative within Cornell's College of Computing and Information Science, led by Professors Solon Barocas, Jon Kleinberg, Karen Levy, and Helen Nissenbaum. We engage with technical, sociological, and legal experts to understand and guide the future impact of AI and machine learning research and deployed systems.

CTRL-ALT Lab   Cornell University, starting Spring 2022

- Led by Professor James Grimmelmann (Cornell Tech and Cornell Law School), the **C**ornell **T**ech **R**esearch Lab for **A**pplied **L**aw and **T**echnology is an interdisciplinary group of legal and CS scholars studying how law can apply to technology, and technology can apply to law.

FAKE Lab   Cornell University, starting Spring 2022

- Led by Professor Gili Vidan (Information Science), the lab is an interdisciplinary group that studies **F**idelity, **A**uthenticity, and **K**nowability in **E**lectronic media.

Service and Outreach

Conference and Workshop Reviewer
- 2022: *ICLR*, *FAccT*
- 2021: *AIES*, *FAccT*, *ICLR* (*Robust Machine Learning Workshop*), *ICML*, *NeurIPS* (technical reviewer and ethics reviewer)
- 2020: *FAccT*, *NeurIPS* (*Retrospectives Workshop*)
- 2019: *SOSP* (assisted faculty reviewer)

Cornell Department of Computer Science (Ithaca, NY)
- Elected President of the Computer Science Graduate Organization (2021 – present)
- Elected student representative to the new CIS building committee (2021 – present)
- Pre-application reader/mentor for URM applicants PhD program (2020 – present)
- Member of the PhD admissions committee (2019 – present)
- Member of the PhD admitted student visit team (2019 – present)
- Student representative for faculty hire student meetings (2019 – present)
- Co-leader of the CS PhD LGBT group (2019 – present)

Cornell Department of Information Science (Remote)
- Developed course materials for final project for Professor Helen Nissenbaum's half-semester course on Values at Play (Fall 2020)

Black in AI (BAI) (Remote)
- Graduate Student Ally Volunteer; Community for facilitating collaboration and increasing representation of Black people in AI (2018 – present)

LatinX in AI (Remote)
- Graduate Student Ally Volunteer; Community for facilitating collaboration and increasing representation of LatinX people in AI (2021 – present)

Cornell, Maryland, Max Planck Summer School (Saarbrücken, Germany)

- Graduate Student Volunteer; Summer school for high-achieving students interested in learning about doing a Ph.D. (August 2019)

Industry Experience

Cogitai, Inc. (Acquired by Sony AI, 2019)
Remote (New York, NY)   2017 – 2018
Platform Software Engineer, Early-stage, academic-spinoff reinforcement learning startup
Betterment
New York, NY   2015 – 2017
Senior Software Engineer, Late-stage startup; largest independent automated, investing advisor
Amazon
Seattle, WA   2014 – 2015
Software Development Engineer, Top e-commerce and cloud computing technology company

Miscellany

I make a lot of pasta.