A. Feder Cooper

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I am a scalable machine-learning (ML) researcher, working on reliable measurement and evaluation of ML. My research develops quality metrics for ML capabilities, and makes sure that we can effectively measure these metrics at scale and in practice. My contributions span uncertainty estimation, privacy and security of generative-AI systems, distributed training, hyperparameter optimization, and model selection. I also do work in tech policy and law, and spend a lot of time finding ways to effectively communicate the capabilities and limits of AI/ML to interdisciplinary audiences and the public.

Current Positions

Co-lead, The Center for Generative AI, Law, and Policy Research
Postdoctoral Researcher, Microsoft Research (starting July 2024)
Affiliate Researcher, Stanford HAI, RegLab, and CRFM (starting July 2024)
Affiliate at the Berkman Klein Center for Internet & Society at Harvard University

Upcoming Appointments

Assistant Professor, Department of Computer Science, Yale University (starting July 2026)

Education

Cornell University
Ph.D., Computer Science   2018 – 2024
M.S., Computer Science   2021

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

Papers

*Equal contribution

Preprints and working papers

Milad Nasr*, Nicholas Carlini*, Jonathan Hayase, Matthew Jagielski, **A. Feder Cooper**, Daphne Ippolito, Christopher A. Choquette-Choo, Eric Wallace, Florian Tramèr, and Katherine Lee. "Scalable Extraction of Training Data from (Production) Language Models." Under submission, 2023. [link]

Publications

A. Feder Cooper* and James Grimmelmann*. "The Files are in the Computer: Copyright, Memorization, and Generative AI." Forthcoming, *Chicago-Kent Law Review*, Fall 2024. [link]

A. Feder Cooper*, Katherine Lee*, and James Grimmelmann*. "Talkin' 'Bout AI Generation: Copyright and the Generative-AI Supply Chain." Forthcoming, *Journal of the Copyright Society*, 2024. [link]

   Preliminary non-archival version: *Privacy Law Scholars Conference 2023*

Nicholas Carlini, Daniel Paleka, Krishnamurthy Dj Dvijotham, Thomas Steinke, Jonathan Hayase, **A. Feder Cooper**, Katherine Lee, Matthew Jagielski, Milad Nasr, Arthur Conmy, Eric Wallace, David Rolnick, and Florian Tramèr. "Stealing Part of a Production Language Model." *International Conference on Machine Learning 2024* (*ICML '24*), 27.5% acceptance rate. [link]

Daniel McDuff, Tim Korjakow, Scott Cambo, Jesse Josua Benjamin, Jenny Lee, Yacine Jernite, Carlos Muñoz Ferrandis, Aaron Gokaslan, Alek Tarkowski, Joseph Lindley, **A. Feder Cooper**, and Danish Contractor. "On the Standardization of Behavioral Use Clauses and Their Adoption for Responsible Licensing of AI." *International Conference on Machine Learning 2024* (*ICML '24*), 27.5% acceptance rate. [**link**]

Aaron Gokaslan, **A. Feder Cooper**, Jasmine Collins, Landan Seguin, Austin Jacobson, Mihir Patel, Jonathan Frankle, Cory Stephenson, and Volodymyr Kuleshov. "CommonCanvas: An Open Diffusion Model Trained with Creative-Commons Images." *Conference on Computer Vision and Pattern Recognition 2024* (*CVPR '24*), 23.6% acceptance rate. [**link**]

> Preliminary non-archival versions: *Workshop on ML for Creativity and Design*; *Workshop on Diffusion Models* at *NeurIPS 2023*

A. Feder Cooper*, Katherine Lee*, and James Grimmelmann*. "Talkin' 'Bout AI Generation: Copyright and the Generative-AI Supply Chain (The Short Version)." *The 3rd ACM Symposium on Computer Science and Law (CSLAW '24)*, 24% acceptance rate, **Long Presentation**. [**link**]

A. Feder Cooper, Katherine Lee, Madiha Choksi, Solon Barocas, Christopher De Sa, James Grimmelmann, Jon Kleinberg, Siddhartha Sen, and Baobao Zhang. "Arbitrariness and Social Prediction: The Confounding Role of Variance in Fair Classification." *38th AAAI Conference on Artificial Intelligence* (*AAAI '24*), **Best Paper Honorable Mention**, < 1% of submitted papers. [**link**]

> Preliminary non-archival version: *Workshop on Algorithmic Fairness through the Lens of Time* at *NeurIPS 2023*.

A. Feder Cooper*, Wentao Guo*, Khiem Pham*, Tiancheng Yuan, Charlie F. Ruan, Yucheng Lu, and Christopher De Sa. "Coordinating Distributed Example Orders for Provably Accelerated Training." *Conference on Neural Information Processing Systems 36 (NeurIPS '23)*, 26% acceptance rate. [**link**]

> Preliminary nonarchival version: *3rd Workshop on Data-centric Machine Learning Research* at *The Fortieth International Conference on Machine Learning (ICML 2023)*.

A. Feder Cooper, Jonathan Frankle, and Christopher De Sa. "Non-Determinism and the Lawlessness of Machine Learning Code." *The 2nd ACM Symposium on Computer Science and Law (CSLAW '22)*. [**link**]

A. Feder Cooper and Karen Levy. "Fast or Accurate? Governing Conflicting Goals in Highly Autonomous Vehicles." *Colorado Technology Law Journal*, Vol. 20, 2022. [**link**]

A. Feder Cooper*, Emanuel Moss*, Benjamin Laufer, and Helen Nissenbaum. "Accountability in an Algorithmic Society: Relationality, Responsibility, and Robustness in Machine Learning." *Proceedings of the 5th ACM Conference on Fairness, Accountability, and Transparency (FAccT '22)*, 25% acceptance rate. [**link**]

A. Feder Cooper and Gili Vidan. "Making the Unaccountable Internet: The Changing Meaning of Accounting in the Early ARPANET." *Proceedings of the 5th ACM Conference on Fairness, Accountability, and Transparency (FAccT '22)*, 25% acceptance rate. [**link**]

Benjamin Laufer, **A. Feder Cooper***, Sameer Jain*, Jon Kleinberg, and Hoda Heidari. "Four Years of FAccT: A Reflexive, Mixed-Methods Analysis of Research Contributions, Shortcomings, and Future Prospects." *Proceedings of the 5th ACM Conference on Fairness, Accountability, and Transparency (FAccT '22)*, 25% acceptance rate. [**link**]

A. Feder Cooper, Yucheng Lu, Jessica Zosa Forde, and Christopher De Sa. "Hyperparameter Optimization Is Deceiving Us, and How to Stop It." *Conference on Neural Information Processing Systems 34 (NeurIPS '21)*, < 26% acceptance rate. [**link**]

> Preliminary non-archival version: *Workshop on Robust Machine Learning* at *The Ninth International Conference on Learning Representations (ICLR '21)*.

A. Feder Cooper, Karen Levy, and Christopher De Sa. "Accuracy-Efficiency Trade-Offs and Accountability in Distributed ML Systems." *Proceedings of the 2021 ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO '21)*, **Oral**, < 10% of submitted papers. [**link**]

> Preliminary non-archival version: *Workshop on Law and Machine Learning* at *The Thirty-seventh International Conference on Machine Learning (ICML '20)*, **Oral**.

A. Feder Cooper, Maria Antoniak, Christopher De Sa, Marilyn Migiel, and David Mimno. " '*Tecnologica cosa*': Modeling Storyteller Personalities in Boccaccio's *Decameron*." *SIGHUM Workshop on Computational Linguistics for Cultural Heritage, Social Sciences, Humanities and Literature* at *The 2021 Conference on Empirical Methods in Natural Language Processing (EMNLP '21)*. [**link**]

A. Feder Cooper and Ellen Abrams. "Emergent Unfairness in Algorithmic Fairness-Accuracy Trade-Off Research." *Proceedings of the 2021 AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society (AIES '21)*, Oral, $< 10\%$ of submitted papers. [link]

A. Feder Cooper*, Ruqi Zhang*, and Christopher De Sa. "Asymptotically Optimal Exact Minibatch Metropolis-Hastings." *Conference on Neural Information Processing Systems 33 (NeurIPS '20)*, **Spotlight**, $< 3\%$ of submitted papers. [link]

Ruqi Zhang, **A. Feder Cooper**, and Christopher De Sa. "AMAGOLD: Amortized Metropolis Adjustment for Efficient Stochastic Gradient MCMC." *Proceedings of the Twenty-third International Conference on Artificial Intelligence and Statistics (AISTATS '20)*. [link]

Non-archival papers, articles, and technical reports

Listed only if there is no associated archival publication above. Not all papers are publicly available.

A. Feder Cooper*, Katherine Lee*, James Grimmelmann*, Daphne Ippolito*, Christopher Callison-Burch, Christopher A. Choquette-Choo, Niloofar Mireshghallah, Miles Brundage, David Mimno, Madiha Zahrah Choksi, Jack M. Balkin, Nicholas Carlini, Christopher De Sa, Jonathan Frankle, Deep Ganguli, Bryant Gipson, Andres Guadamuz, Swee Leng Harris, Abigail Z. Jacobs, Elizabeth Joh, Gautam Kamath, Mark Lemley, Cass Matthews, Christine McLeavey, Corynne McSherry, Milad Nasr, Paul Ohm, Adam Roberts, Tom Rubin, Pamela Samuelson, Ludwig Schubert, Kristen Vaccaro, Luis Villa, Felix Wu, and Elana Zeide. "Report of the 1st Workshop on Generative AI and Law." 2023. [link]

A. Feder Cooper*, Katherine Lee*, James Grimmelmann, and Daphne Ippolito. "AI and Law: The Next Generation (An explainer series)." 2023. [link]

Kweku Kwegyir-Aggrey, **A. Feder Cooper**, Jessica Dai, John Dickerson, Keegan Hines, and Suresh Venkatasubramanian. "Repairing Regressors for Fair Classification at Any Decision Threshold." *Workshop on Optimal Transport and Machine Learning*; *Workshop on Algorithmic Fairness through the Lens of Time* (**Oral**) at *NeurIPS 2023*. [link]

A. Feder Cooper, Madiha Zahrah Choksi, Katherine Lee, Solon Barocas, Christopher De Sa, James Grimmelmann, Jon Kleinberg, Siddhartha Sen, and Baobao Zhang. "Distribution Justice: Variance, Uncertainty, and Rules in Machine Learning and Law." *Data (Re)Makes the World Conference*, Information Society Project at Yale Law School, $< 17\%$ acceptance rate; *Privacy Law Scholars Conference*, 2023 (Archival version in progress for the Winter 2024 law review cycle). [link]

A. Feder Cooper, Solon Barocas, Karen Levy, and Gili Vidan. " 'We have met the enemy and it is us': Debating the ethics of computing in the pages of *CACM*." *2022 Workshop of the The Special Interest Group for Computing, Information, and Society (SIGCIS '22)*, Talk.

A. Feder Cooper*, Jessica Zosa Forde*, Kweku Kwegyir-Aggrey, Christopher De Sa, and Michael Littman. "Model Selection's Disparate Impact in Real-World Deep Learning Applications." *Workshop on the Science and Engineering of Deep Learning* at *The Ninth International Conference on Learning Representations (ICLR '21)*, **Oral**. [link]

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 session**, 2019. [link]

Graduate Honors and Awards

AAAI **Conference Best Paper Honorable Mention (**$< 1\%$ **of submitted papers) (2024)**
Awarded to [Arbitrariness and Social Prediction: The Confounding Role of Variance in Fair Classification](#)

AFT Workshop **at** *NeurIPS* **Workshop Oral Presentation (**$4/25$ **accepted papers) (2023)**
Awarded to [Repairing Regressors for Fair Classification at Any Decision Threshold](#)

Meta Ph.D. Fellowship Finalist (2023)
One of a handful of students (out of 3200) named as a finalist for the Meta (previously Facebook) Ph.D. fellowship.

Outstanding *ICML* **Reviewer (**$\leq 10\%$ **of reveiwers) (2022)**

Cornell Department of Computer Science Service Award (2022)

Named a Rising Star in EECS, MIT (2021)

Prestigious award recognizing "historically marginalized or underrepresented genders who are interested in pursuing academic careers in electrical engineering, computer science, and artificial intelligence and decision-making" [**link**]

Digital Life Initiative Doctoral Fellowship (2021 – 2022)

Selective Cornell University Bowers College of Computing and Information Sciences fellowship; administered by Professor Helen Nissenbaum at Cornell Tech

EAAMO **Conference Oral Presentation (**$< 10\%$ **of submitted papers) (2021)**

Awarded to **Accuracy-Efficiency Trade-Offs and Accountability in Distributed ML Systems**

AIES **Conference Oral Presentation (**$< 10\%$ **of submitted papers) (2021)**

Awarded to **Emergent Unfairness in Algorithmic Fairness-Accuracy Trade-Off Research**

SEDL Workshop at ICLR **Workshop Oral Presentation (**$2/15$ **accepted papers) (2021)**

Awarded to **Model Selection's Disparate Impact in Real-World Deep Learning Applications**

3rd Place Fellowship Finalist, Two Sigma Ph.D. Diversity Fellowship (2021)

Fellowship Finalist, OpenPhil AI Ph.D. Fellowship (2021)

NeurIPS **Conference Spotlight Award (**$< 3\%$**) (2020)**

Awarded to to **Asymptotically Optimal Exact Minibatch Metropolis-Hastings**

Cornell University Fellowship (2018 – 2019)

Fellowship awarded to a select number of incoming Ph.D. students

Workshop Organization

2nd Workshop on Generative AI and Law (GenLaw '24). Held at *ICML 2024* in Vienna, Austria. Lead co-organizer with Katherine Lee (Senior Research Scientist at Google DeepMind). More details coming soon. [**link**]

Evaluating Generative AI Systems: the Good, the Bad, and the Hype (GenLaw DC '24). Lead co-organizer. Sponsored by the K&L Gates initiative in Ethics and Computational Technologies at Carnegie Mellon University (CMU), and organized by the GenLaw Center (A. Feder Cooper, Katherine Lee, James Grimmelmann), Carnegie Mellon's K&L Gates Initiative (Hoda Heidari), the Georgetown Law Center (Paul Ohm), and the Center for Democracy and Technology (Alexandra Reeve Givens, Miranda Bogen). [**link**]

1st Workshop on Generative AI and Law (GenLaw '23). Held at *ICML 2023* in Honolulu, Hawai'i, 26% acceptance rate. Lead co-organizer with Katherine Lee; co-organized with Dr. Niloofar Mireshghallah, Madiha Zahrah Choksi, Prof. James Grimmelmann, Prof. David Mimno, and Dr. Deep Ganguli [**link**]

Invited Talks, Panels, and Workshops

Unless explicitly mentioned, all papers had an associated talk. Additional talks are listed here.

Invited participant, "Transform: Copyright." Harvard Law School. April 22, 2024 (Cambridge, MA).

"Reliable Measurement for ML at Scale."

Khoury College of Computer Sciences at Northeastern University, April 23, 2024 (Boston, MA) [canceled due to illness].

University of Illinois, School of Information Science, March 28, 2024 (Urbana-Champaign, IL) [canceled due to illness].

University of Michigan, School of Information, March 18, 2024 (Ann Arbor, MI) [canceled due to illness].

New York University, Department of Computer Science, March 14, 2024 (New York, NY).

Yale University, Department of Computer Science, March 7, 2024 (New Haven, CT).

University of Wisconsin, Department of Computer Science, February 15, 2024 (Madison, WI).

Max Planck Institute for Security and Privacy, February 8, 2024 (Bochum, Germany).

Microsoft Research, Machine Learning group, January 31, 2024 (Virtual – New York, NY).

Microsoft Research, FATE group, January 31, 2024 (Virtual – New York, NY).

"Extractable Memorization and Its Relationship to Copyright." Prof. Yejin Choi's Lab Group Meeting, University of Washington, January 21, 2024 (Seattle, WA).

"Talkin' 'Bout AI Generation: Copyright and the Generative-AI Supply Chain."

Ideas Lunch Speaker Series, Yale Law School, February 29, 2024 (Virtual - New Haven, CT).

Federated Learning Talks, Google Research, December 7, 2023 (Seattle, WA).

Carnegie Mellon University, November 30, 2023 (Pittsburgh, PA).

Invited panelist, "Governance & Accountability for ML: Existing Tools, Ongoing Efforts, & Future Directions." *Conference on Neural Information Processing* (*NeurIPS*), co-convened by Profs. Hoda Heidari and Emily Black, December 2023 (New Orleans, LA).

Invited panelist, "The Legal and Ethical Implications of Massive Scraped Training Datasets." Foundation and Language Model (FLAME) Seminar, Carnegie Mellon University, December 1, 2023 (Pittsburgh, PA).

"More-Reliable Measurement in Algorithmic Fairness and Hyperparameter Optimization." Machine Learning Department Faculty Seminar, Carnegie Mellon University, November 28, 2023 (Pittsburgh, PA).

"Talkin' 'Bout AI Generation: Copyright, Machine Learning Research, and the Generative-AI Supply Chain." **ASSET Center for AI-Enabled Systems**, University of Pennsylvania, School of Engineering and Applied Sciences, November 1, 2023 (Philadelphia, PA).

Invited participant, *Operationalizing the Measure Function of the NIST AI Risk Management Framework*, **Center for Advancing Safety of Machine Intelligence** & **NIST-NSF Institute for Trustworthy AI in Law and Society**, & the **Federation of American Scientists**, October 16-17, 2023 (Washington, DC).

Invited participant, *Sociotechnical Approaches to Measurement and Validation for Safety in AI*, **Center for Advancing Safety of Machine Intelligence**, July 18-19, 2023 (Evanston, IL).

"Is My Prediction Arbitrary? Measuring Self-Consistency in Fair Classification." Machine Learning Collective (MLC), June 2023 (virtual).

"Can Governance be Reconciled with Uncertainty in Machine Learning?" Hosted by the Center for the Study of Complex Systems, and co-sponsored by the Michigan Institute for Data Science (MIDAS) and the Center for Ethics, Society, and Computing (ESC), University of Michigan. March 23, 2023 (Ann Arbor, MI). [**link**]

"Uncertainty, Reliability, and Accountability in ML." Facebook AI Research (Meta), Paris, December 2022 (virtual).

"Toward More Reliable Hyperparameter Optimization." [**slides**]

Robotics Group, Brown Department of Computer Science, May 2022 (virtual)

Michael Carbin's Lab, MIT EECS, February 2022 (virtual)

UberAI, February 2022 (virtual)

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, 2023 (virtual).

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**]

Affiliations

Stanford HAI, RegLab, and CRFM, Palo Alto, CA, starting Summer 2024

Working with Percy Liang and Dan Ho

Microsoft Research, New York, NY, starting Summer 2024

Postdoctoral researcher

Cornell University, Machine Learning Group, Ithaca and New York, NY, Fall 2018 – present

Ph.D. student researcher

Berkman Klein Center for Internet & Society, Harvard University, Fall 2023 – present

Affiliate member

Google Research, Federated Learning Team, Seattle, WA and Remote, Fall 2023 - Spring 2024

Worked with Zachary Charles on a project concerning privacy and LLM fine-tuning

CTRL-ALT Lab, Cornell Tech, 2022 – 2023

Led by Professor James Grimmelmann, studies how law can apply to technology, and technology can apply to law.

Artificial Intelligence Policy and Practice (AIPP), Cornell, Ithaca, NY, Spring 2018 – 2023

Assisted faculty with convening AIPP, a MacArthur-funded initiative

Microsoft Research, Remote (New York, NY), Summer 2022

Worked with co-mentors Solon Barocas Siddhartha Sen on projects regarding statistical variance in ML fairness.

Teaching

Guest lecturer, CS4787: Principles of Large-Scale Machine Learning | Fall 2022

Machine learning on GPUs. ML Accelerators.
Deployment and low-latency inference. Real-time learning. Deep neural network compression and pruning.

TA, CS5150: Software Engineering | Cornell University, Spring 2019 and Spring 2020

TA, CS6787: Advanced Machine Learning Systems | Cornell University, Fall 2018

Mentorship

I frequently serve in both unofficial and official capacities as a mentor to more junior Ph.D., master's, and undergraduate students (typically, undergraduates applying to graduate school). Formal research mentees:

Yimeng Zeng (Ph.D. Student at University of Pennsylvania CS); Jianan Canal Li (Ph.D. Student at University of California, Berkeley EECS); Dean Alvarez (Ph.D. Student at UIUC CS); Wentao Guo (incoming Ph.D. Student at Princeton CS), Charlie Ruan, TC Yuan, Gary Wei (Current undergraduate and masters students at Cornell)

Service

Reviewer

ICLR (2022-2023), *ICML* (2021-2023), *NeurIPS* (2020-2023), *TMLR* (2022-present), *JMLR* (2022), *FAccT* (2021-2023), *AIES* (2021), *EAAMO* (2021)

Cornell University, Department of Computer Science (Ithaca, NY)

Mentor, Under-represented Ph.D. applicants support program (2020 – present); **President**, Computer Science Graduate Organization (2021 – 2022); **Student representative**, Computer Science faculty hiring student meetings (2019 – 2022); **Co-leader**, Computer Science and Information Science Ph.D. LGBT group (2019 – 2022); **Member**, Computer Science Ph.D. admissions committee (2019 – 2021); **Member**, Computer Science Ph.D. admitted student visit team (2019 – 2021)