

Roy Rinberg

www.royrinberg.com
royrinberg+CV@gmail.com
Github: RoyRin

EDUCATION	Harvard University, Cambridge, MA 2023 - PRESENT PhD. Computer Science. Advisors: Prof. Seth Neel and Prof. Salil Vadhan
	Columbia University, New York, NY 2021 - 2023 MS in Computer Science [Thesis Track]. Advisors: Prof. Rachel Cummings and Prof. Steven Bellovin
	New York University, New York, NY 2014 - 2018 B.A. Computer Science, Physics, Minor: Math.
	Thomas Jefferson High School for Science and Technology, Alexandria, VA 2010 - 2014
RESEARCH EXPERIENCE	Harvard University, Cambridge, MA AUG. 2023 - PRESENT Trustworthy Machine Learning [Advisors: Prof. Seth Neel and Prof. Salil Vadhan] <ul style="list-style-type: none">• Research on foundations of machine learning and fundamentals of Differential Privacy (DP).• Research on Machine Unlearning.
	Columbia University, New York, NY AUG. 2021 - AUG. 2023 Privacy in ML [Advisors: Prof. Rachel Cummings and Prof. Steven Bellovin] <ul style="list-style-type: none">• Extensions of Gaussian & Laplace DP primitives, and their application to ML. <i>In Submission</i>.• Research on Catered PATE - PATE in the presence of heterogenous data (link). <i>On-going</i>.• Research on how ML algorithms memorize training data.
	Vector Institute, Toronto, ON MAY 2022 - SEP. 2022 Privacy in Machine Learning [Advisor: Prof. Nicolas Papernot] <ul style="list-style-type: none">• Research on Individualization of PATE (PoPETs 2023) and DP-SGD (Neurips 2024).• Research on reducing distributional and user-preference-level assumptions in private ML.
	New York University, New York, NY FEB. 2017 - MAY 2018 Evolution of Language Models within Social Networks [Advisor: Prof. Bud Mishra] <ul style="list-style-type: none">• Studied the development of echo chambers within social networks using TDA to study distances between Word2Vec models trained on Reddit text. Preprint on arXiv.
PAPERS	<ol style="list-style-type: none">1. R. Rinberg, K. Georgiev, S. Park, S. Garg, A. Ilyas, A. Madry, S. Neel. <i>Attribute-to-Delete: Machine Unlearning via Datamodel Matching</i>. (2024). ICLR 2025.2. R. Rinberg, Iliia Shumailov, Rachel Cummings, Nicolas Papernot. <i>Beyond Laplace and Gaussian: Exploring the Generalized Gaussian Mechanism for Private Machine Learning</i>. Preprint.3. F. Boenisch, C Mühl, A. Dziedzic, R. Rinberg, N. Papernot. <i>Have it your way: Individualized Privacy Assignment for DP-SGD</i>. Accepted to Neurips 2023.4. F. Boenisch, C Mühl, R. Rinberg, J. Ihrig, A. Dziedzic. <i>Individualized PATE: Differentially Private Machine Learning with Individual Privacy Guarantees</i>. Accepted to PoPETs 2023.5. R. Rinberg, N. Agarwal. <i>Privacy when Everyone is Watching: An SOK on Anonymity on the Blockchain</i>. ePrint.6. A. Tamaskar, R. Rinberg, S. Chakraborty, B. Mishra. <i>Creolizing the Web</i>. arXiv.
WORKSHOPS	<ol style="list-style-type: none">1. R. Rinberg and M. Pawelczyk. <i>When is Differentially Private Finetuning Actually Private?</i> In: SFLLM (NeurIPS 2024 Workshop). 2024. Openreview and associated Blog.
TEACHING AND SERVICE	<ol style="list-style-type: none">1. Harvard - CS1200 (Intro to Algorithms) Head Teaching Fellow FALL 20242. OSDI (USENIX) 2023 - Assistant organizer for PC SPRING 20233. NYU - General Physics I and II Tutor 2017 - 2018

SELECTED
WORK
EXPERIENCE

Shelton AI, New York, NY JAN. 2022 - JUN. 2022
Lead Software Engineer

Shelton AI leverages machine learning to help pension funds manage investments in private equity.

- Worked with CEO to develop fintech product to manage 10s of millions of dollars.
- Developed core AWS infrastructure for NLP document processing pipeline.

Ouster, San Francisco, CA JUN. 2018 - JUL. 2021
Software Engineer

Ouster is a company developing lidar sensors. I was an early-stage engineer working on lidar-based collision-avoidance systems.

- Led development of on-edge computing for live predictions about dangerous driving.
- Developed platforms for evaluating algorithms on historical lidar data and monitoring live data.
- *Internship Project:* Produced open-source C++ lidar point-cloud data visualizer ([Github link](#)).

Career Copilots, San Francisco, CA MAY 2020 - AUG. 2020
Software Engineer

Career Copilots is a startup seeking to help individuals find jobs using LinkedIn data.

- Developed web-scraping data-exploration pipeline of jobs-data to help users find relevant roles.

Knight First Amendment Institute, New York, NY SEPT. 2022 - MAY 2023
Algorithmic Amplification in Society [Advisor: Professor Arvind Narayanan]

KFAI works to protect digital freedoms through strategic litigation, research, and education.

- Work with Professor Arvind Narayanan to develop essays, videos, and interactives for explaining how algorithmic amplification can affect speech online.

AWARDS,
MEMBERSHIPS,
CONFERENCES

Columbia Advanced Master's Research Specialization	2022-2023
Presidential Honors Scholar (NYU)	2015 - 2018
Dean's List (NYU)	2014 - 2018
Sigma Pi Sigma (Physics Honor Society) (NYU)	INDUCTED 2018
HPC for Undergraduates - Conference Scholarship for SC'17	FALL 2017
DURF & Research+ for Housing and Stipend (NYU)	SUMMER 2017

COMMUNITY
ENGAGEMENT

Technically Private (Organizer)	2021-PRESENT
• Organize group of inter-university graduate students in the privacy and security spaces, across legal, policy, and technical domains.	
Project BEST (Building Excitement for Science and Tech) (Cofounder)	2011-2014
• Fundraised and grew organization to 25 chapters across 3 states, reaching 3000+ students.	
• Led two full-day STEM programs for 100+ students, and co-led team of 20 volunteers.	
Ouster Community Work	2018-2020
• Advocated management to donate \$6k to 6 public-interest orgs and institute paid volunteer-day.	

COURSES AND
SOFTWARE SKILLS

Selected CS Coursework: Neural Networks, Cryptography, ML, Computational Learning Theory, Foundations of Blockchain, Security, Theory of Computation, Operating Systems, Computer Systems Organization

Selected Interdisciplinary Coursework: Anonymity and Privacy, Policy for Privacy Technology

Selected Math Coursework: Honors Algebra, Analysis, Probability, Linear Algebra, Statistics

Software and Programming Languages: Python, C, C++, Go, Linux, Pytorch, Tensorflow, Docker, AWS, Google Cloud Services, ROS, ELK Stack, Pandas, Jenkins, Artifactory, SQL, Web-scraping, Opacus