

Xinyi Chen

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RESEARCH INTERESTS	My research is at the intersection of machine learning, optimization, and dynamical systems. I focus on developing provably robust and efficient methods for sequential decision-making and control, with applications in medical devices, deep learning, and quantum computing.	
EDUCATION	Princeton University Ph.D. Candidate, Department of Computer Science Advisor: Prof. Elad Hazan Areas of Study: Theoretical Machine Learning, Optimization, and Control	Princeton, NJ Jun. 2022 (expected)
	Princeton University Department of Mathematics, <i>cum laude</i> Certificate in Computer Science Advisor: Prof. Elad Hazan Thesis: <i>On Second Order Methods in Optimization for Machine Learning.</i>	Princeton, NJ Jun. 2017
HONORS AND AWARDS	EECS Rising Stars, <i>UC Berkeley EECS</i> Poster Award Honorary Mention, <i>New York Academy of Sciences ML Symposium</i> NSF Graduate Research Fellowship Gordon Wu Fellowship, <i>Princeton University</i> Middleton Miller '29 Prize for Best Undergraduate Thesis, <i>Princeton University</i>	
SERVICE AND LEADERSHIP	General Co-Chair: Women in Machine Learning Workshop	NeurIPS 2020
	Area Chair: Women in Machine Learning Workshop	NeurIPS 2019, 2021
	Program Committee Member: Conference on Learning Theory	2021
	Conference reviewer for COLT, ICML, and NeurIPS. Journal reviewer for the Journal of Machine Learning Research. Workshop reviewer for the Workshop on Reinforcement Learning Theory, ICML.	
PROFESSIONAL EXPERIENCE	Google AI Princeton Founding Member, Research Scientist	Princeton, NJ Apr. 2018 – present
	<ul style="list-style-type: none">• Robust and efficient algorithm design with provable guarantees in machine learning and control with applications to mechanical ventilation control.• Theoretical and empirical research in adaptive regularization for large-scale optimization, language modeling, and quantum computing.	

PUBLICATIONS

CONFERENCE PUBLICATIONS

1. *Machine Learning for Mechanical Ventilation Control*.
Daniel Suo, Cyril Zhang, Paula Gradu, Udaya Ghai, **Xinyi Chen**, Edgar Minasyan, Naman Agarwal, Karan Singh, Julianne LaChance, Tom Zajdel, Manuel Schottdorf, Daniel Cohen, and Elad Hazan.
Machine Learning for Health (ML4H), 2021.
2. *Black-box Control for Linear Dynamical Systems*.
Xinyi Chen and Elad Hazan.
Conference on Learning Theory (COLT), 2021.
3. *Online Agnostic Boosting via Regret Minimization*.
Nataly Brukhim, **Xinyi Chen**, Elad Hazan, and Shay Moran.
Conference on Neural Information Processing Systems (NeurIPS), 2020.
4. *Calibration, Entropy Rates, and Memory in Language Models*.
Mark Braverman, **Xinyi Chen**, Sham M. Kakade, Karthik Narasimhan, Cyril Zhang, and Yi Zhang.
International Conference on Machine Learning (ICML), 2020.
5. *Extreme Tensoring for Low-Memory Preconditioning*.
Xinyi Chen, Naman Agarwal, Elad Hazan, Cyril Zhang, and Yi Zhang.
International Conference on Learning Representations (ICLR), 2020.
6. *Efficient Full-Matrix Adaptive Regularization*.
Naman Agarwal, Brian Bullins, **Xinyi Chen**, Elad Hazan, Karan Singh, Cyril Zhang, and Yi Zhang.
International Conference on Machine Learning (ICML), 2019.
7. *Online Learning of Quantum States*.
Scott Aaronson, **Xinyi Chen**, Elad Hazan, Satyen Kale, and Ashwin Nayak.
Conference on Neural Information Processing Systems (NeurIPS), 2018.
Quantum Information Processing Conference (QIP), 2019.

JOURNAL PROCEEDINGS

8. *Online Learning of Quantum States*.
Scott Aaronson, **Xinyi Chen**, Elad Hazan, Satyen Kale, and Ashwin Nayak.
Journal of Statistical Mechanics Machine Learning Special Issue, 2019.

PREPRINTS AND WORKSHOPS

9. *Provable Regret Bounds for Deep Online Learning and Control*.
Xinyi Chen, Edgar Minasyan, Jason D. Lee, and Elad Hazan.
10. *Robust Online Control with Model Misspecification*.
Xinyi Chen, Udaya Ghai, Elad Hazan, and Alexandre Megretski.
ICML Workshop on Reinforcement Learning Theory, 2021.
11. *Black-box Control for Linear Dynamical Systems*.
Xinyi Chen and Elad Hazan.
ICML Theoretical Foundations of RL Workshop, 2020.
12. *Optimistic Adaptive Gradient Methods*.
Xinyi Chen, Simon S. Du, and Elad Hazan.
NeurIPS Workshop on the Optimization Foundations of RL, 2020.

TEACHING EXPERIENCES	Teaching Assistant	
	Advanced Topics in Computer Science: Computational Control Theory (COS 597D), Fall 2020 Theoretical Computer Science (COS 511), Spring 2022	
	Guest Lecturer	
	Theoretical Machine Learning (COS 511), Fall 2019	
SELECTED TALKS	Learning to Control in Adversarial Environments.	
	• TAQIS Seminar at Missouri S&T, Virtual	2021
	Provable Regret Bounds for Deep Online Learning and Control.	
	• Google Research Learning Theory Workshop, Virtual	2021
	Black-box Control for Linear Dynamical Systems.	
	• Conference on Learning Theory, Boulder, CO	2021
	• Google Research Diff-everything Workshop, Virtual	2021
	• AIML Tea at Princeton University, Virtual	2021
	• RL Theory Virtual Seminar , Virtual	2020
	Online Agnostic Boosting via Regret Minimization.	
	• Google Research Conference, Mountain View, CA	2020
	• ML Lunch at Microsoft Research New England, Cambridge, MA	2019
	• Women in Machine Learning Workshop at NeurIPS, Vancouver, BC	2019
	Efficient Full-Matrix Adaptive Regularization.	
	• International Conference on Machine Learning, Long Beach, CA	2019
	Online Learning of Quantum States.	
	• AlgML Seminar at Princeton University, Princeton, NJ	2018