

Lily Xu

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lily-x.github.io

EDUCATION	Harvard University , Cambridge, MA PhD Candidate, School of Engineering and Applied Sciences Advised by Prof. Milind Tambe	2019 – present
	Dartmouth College , Hanover, NH A.B. with Honors in Computer Science, minor in Spanish <i>Magna cum laude</i>	2014 – 2018
PUBLICATIONS	Ranked Group Fairness in Combinatorial Bandit Allocation <i>Under review</i> Lily Xu, Arpita Biswas, Fei Fang, Milind Tambe	
	Robust Restless Bandits: Tackling Interval Uncertainty with Deep Reinforcement Learning <i>Under review</i> Jackson A. Killian, Lily Xu, Arpita Biswas, Milind Tambe	
	Coordinating Followers to Reach Better Equilibria: End-to-End Gradient Descent for Stackelberg Games <i>Under review</i> Kai Wang, Lily Xu, Andrew Perrault, Michael K. Reiter, Milind Tambe	
	Robust Reinforcement Learning Under Minimax Regret for Green Security <i>UAI-21: Proc. 37th Conference on Uncertainty in Artificial Intelligence</i> Lily Xu, Andrew Perrault, Fei Fang, Haipeng Chen, Milind Tambe Oral Presentation (6.17% of submissions)	
	Envisioning Communities: A Participatory Approach Towards AI for Social Good <i>AIES-21: Proc. 4th AAAI/ACM Conference on AI, Ethics, and Society</i> Elizabeth Bondi*, Lily Xu*, Diana Acosta-Navas, Jackson A. Killian <i>*Equal contribution</i>	
	Dual-Mandate Patrols: Multi-Armed Bandits for Green Security <i>AAAI-21: Proc. 35th AAAI Conference on Artificial Intelligence</i> Lily Xu, Elizabeth Bondi, Fei Fang, Andrew Perrault, Kai Wang, and Milind Tambe Best Paper Award Runner Up Top 6 of 1692 accepted papers (top 0.08% of submissions)	
	Stay Ahead of Poachers: Illegal Wildlife Poaching Prediction and Patrol Planning Under Uncertainty with Field Test Evaluations <i>ICDE-20: Proc. 36th IEEE International Conference on Data Engineering 2020</i> Lily Xu*, Shahrzad Gholami*, Sara Mc Carthy, Bistra Dilkina, Andrew Plumptre, Milind Tambe, Rohit Singh, Mustapha Nsubuga, Joshua Mabonga, Margaret Driciru, Fred Wanyama, Aggrey Rwetsiba, Tom Okello, Eric Enyel <i>*Equal contribution</i>	

WORKSHOP PAPERS	Enhancing Poaching Predictions for Under-Resourced Wildlife Conservation Parks Using Remote Sensing Imagery <i>NeurIPS Workshop on Machine Learning for Development 2020</i> Rachel Guo, Lily Xu , Andrew Plumptre, Drew Cronin, Francis Okeke, and Milind Tambe Best Lightning Paper		
	Game Theory on the Ground: The Effect of Increased Patrols on Deterring Poachers <i>Working paper</i> <i>Appeared at Harvard CRCS Workshop on AI for Social Good 2020</i> Lily Xu , Andrew Perrault, Andrew Plumptre, Margaret Driciru, Fred Wanyama, Aggrey Rwetsiba, and Milind Tambe		
	A High-Performance Graph Model for Near-Optimal Payments for Ecosystem Services <i>Working paper</i> <i>Appeared at Mechanism Design for Social Good (MD4SG) Workshop 2020</i> Florian Berlinger*, Lily Xu* , Yiling Chen <i>*Equal contribution</i>		
HONORS AND AWARDS	INFORMS Doing Good in Good OR Competition Winner		2021
	AAAI Best Paper Award Runner Up		2021
	Harvard University Certificate of Distinction in Teaching		2021
	Certificate of Appreciation from the SMART Consortium		2018
	Five Citations for Academic Excellence at Dartmouth College		2014 – 2018
	<i>Special distinction rarely awarded by faculty members “for meritorious characteristics not indicated adequately by academic grades.”</i>		
	Computational Photography (Wojciech Jarosz, CS 89.15)		
	Latin American Film (Silvia Spitta, Spanish 63.01)		
	Computer Graphics (Emily Whiting, CS 77)		
	Object-Oriented Programming (Travis Peters, CS 10)		
	Introduction to Programming and Computation (Hany Farid, CS 1)		
	Adobe Women-In-Technology Scholarship – Honorable Mention		2017
	Rick Angulo World Experience Award		2016
	<i>For “intellectual openness, enthusiasm, and impressive academic performance” following a study abroad program in Cusco, Peru. Award in \$1,500.</i>		
	James O. Freedman Presidential Scholar		2016
	Willis S. Fitch '17 Metropolitan Washington Scholarship		2015
	Bank of America’s Joe Martin Scholarship		2014
RESEARCH EXPERIENCE	Harvard University , Cambridge, MA		
	<i>Doctoral Research Assistant</i>		2019 – present
	Advised by Prof. Milind Tambe		
	University of Southern California , Los Angeles, CA		
	<i>Doctoral Research Assistant</i>		2018 – 2019
	Advised by Prof. Bistra Dilkina and Prof. Milind Tambe		
	Dartmouth College , Hanover, NH		
	<i>Undergraduate Senior Thesis Researcher</i>		2017 – 2018
	Advised by Prof. Amro Farid		

	<i>Presidential Scholar Research Assistant</i>	2016 – 2017
	Advised by Prof. Emily Whiting and Prof. David Kotz	
WORK EXPERIENCE	Google , Seattle, WA <i>Software Engineering Intern</i>	Summer 2017
	Dyn, Inc. , Hanover, NH <i>Data Analytics Research Intern</i>	Spring 2016
TEACHING EXPERIENCE	<i>Guest Lecturer</i> Harvard Business School, HBSMBA 2231. From Data to Decisions: The Role of Experiments Cornell Tech, ORIE 5355/INFO 5370. People, Data, Systems Wellesley University, CS 115. Computing for the Socio-Techno Web Australian National University, CECS8001. Building Cyber-Physical Systems University of Pittsburgh, CS 1699. AI for Good: Ethics and Implications University of Michigan, SI 431. Algorithms and Society Harvard University, CS 182. Artificial Intelligence Dartmouth College, CS 11. Foundations of Applied Computer Science	Fall 2021 Fall 2021 Fall 2021 Fall 2021 Spring 2021 Spring 2021 Fall 2020 Spring 2018
	Harvard University <i>Head Teaching Fellow</i> CS 182: Artificial Intelligence	Fall 2020
	Dartmouth College <i>Teaching Assistant, Department of Computer Science</i> CS 31: Algorithms CS 11: Foundations of Applied Computer Science CS 10: Object-Oriented Programming CS 10: Object-Oriented Programming CS 1: Intro to Programming and Computation CS 1: Intro to Programming and Computation CS 1: Intro to Programming and Computation CS 1: Intro to Programming and Computation CS 1: Intro to Programming and Computation	Winter 2017 Spring 2018 Spring 2016 Spring 2015 Spring 2018 Fall 2017 Spring 2017 Winter 2016 Fall 2015
	<i>Teaching Assistant, Tuck School of Business</i> Tuck FWP: Fundamentals of Web Programming Tuck DSA: Data Structures and Analytics	Spring 2017 Spring 2017
STUDENTS MENTORED	April Chen '22, Harvard College Ezenia Diaz-Lembert '23, Harvard College Emilia Cabrera '21, Harvard College (co-mentored with Haipeng Chen) Rachel Guo '22, Harvard College <i>NCWIT Collegiate Award Winner</i>	Summer 2021 Spring 2021 Fall 2020 – Summer 2020 –
PROFESSIONAL SERVICE	Initiative Organization Co-organizer, Mechanism Design for Social Good (MD4SG) Co-lead, MD4SG Community Engagement Co-organizer, MD4SG Working Group on Environment	March 2021 – Oct 2020 – Apr 2021 Jan 2020 – Apr 2021

Program Organization

Social events co-chair, ACM EAAMO	October 2021
Co-organizer, Harvard CRCS Rising Stars Speaker Series	March 2021
Co-organizer, CompSust Open Graduate Seminar (COGS)	Spring 2020
Social co-chair, Fourth Workshop on MD4SG	August 2020
Lead organizer, Harvard CRCS Rising Stars Workshop	March 2020
Co-organizer, Computational Sustainability Doctoral Consortium	October 2019

Program Committee

Conferences

Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO)	2021
ACM SIGCAS Conference on Computing and Sustainable Societies (COMPASS)	2021
AAAI Emerging Track on AI for Social Impact (AISI)	2021
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Workshops

5th Black in AI Workshop @ NeurIPS	2020
Machine Learning for Public Health (ML4PH) @ NeurIPS	2021
Machine Learning for the Developing World (ML4D) @ NeurIPS	2021
Data-Driven Humanitarian Mapping @ KDD	2021
Autonomous Agents for Social Good (AASG) Workshop @ AAMAS	2021
AI for Social Good Workshop @ IJCAI	2020
Resistance AI @ NeurIPS	2020
4th Black in AI Workshop @ NeurIPS	2020
Machine Learning for the Developing World (ML4D) @ NeurIPS	2020
Fourth Workshop on Mechanism Design for Social Good (MD4SG)	2020
AI for Social Good Workshop @ Harvard CRCS	2020
Workshop on Humanitarian Mapping @ KDD	2020

Reviewer

ICML, <i>subreviewer</i>	2021
NeurIPS, <i>subreviewer</i>	2020
IJCAI Special Track on CompSust and Human Well-being, <i>subreviewer</i>	2020
COMPASS, <i>subreviewer</i>	2019
Bloomberg Data for Good Exchange (D4GX), <i>subreviewer</i>	2019

INVITED TALKS INFORMS 2021 Doing Good with Good OR Finalist (Session: VSA84/TE39)

PAWS: AI to Predict and Plan Against Poaching

International Congress for Conservation Biology, Kigali, Rwanda	December 2021
IUCN World Conservation Congress, Marseille, France	September 2021
WILDLABS Tech Tutors: Season Three	September 2021
AI for Climate, Mexico Lightning Talks Series powered by Huawei	July 2021
SMART Partnership, Webinar for International Women's Day	March 2021
WWF Webinar on SMART	April 2020

Dual-Mandate Patrols: Multi-Armed Bandits for Green Security

Beijing Academy of Artificial Intelligence	March 2021
University College London, AI Society journal club	February 2021
Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI-21)	February 2021
CompSust Doctoral Consortium	October 2020
CRCS AI for Social Good Workshop	July 2020
AI and Social Good Symposium, Carnegie Mellon University	April 2020
EconCS Seminar, Harvard University	March 2020

	Poaching Prediction and Patrol Planning Under Uncertainty	
	CRCS Rising Stars Workshop	March 2020
	IEEE International Conference on Data Engineering (ICDE-20)	April 2020
	PhD on Tap, Harvard University	February 2020
	CompSust Doctoral Consortium, Carnegie Mellon University	October 2019
	KDD Data Mining and AI for Conservation Workshop	August 2019
	AAMAS Strategic Reasoning for Societal Challenges Workshop	May 2019
OUTREACH	Speaking: Public Events	
	AI LA Earth Summit	April 2021
	South by Southwest (SXSW), Wildlife AI Panel	March 2021
	World Science Festival, Science and Storytime	June 2019
	Speaking	
	Harvard Tech for Social Good, <i>panelist</i>	April 2021
	Harvard SEAS PhD Admitted Students Open House, <i>panelist</i>	March 2021
	Harvard SEAS Research Labs Open House	November 2020
	GirlsComputingLeague, AIInnovation Business Summit	September 2020
	IEEE Computer Society, Women in Computing, Kerala Chapter	September 2020
	Data Science Africa, Tutorial on MD4SG and the Environment	July 2020
	Ledyard Canoe Club, Inclusivity in the Outdoors	July 2020
	Dartmouth Women in Computer Science, <i>panelist</i>	May 2020
	Harvard SEAS Diversity, Inclusivity, and Belonging, <i>panelist</i>	May 2020
	Center for Initiatives in Jewish Education, high school student visit	March 2020
	L.A. Unified School District (LAUSD), African American Family Day	May 2019
	Zoo Magnet High School, College and Career Day	November 2018
	Mentoring	
	InTouch Peer Mentor, Harvard University	2020 –
	Women in STEM Mentor, Harvard University	2019 – 2020
	Women in Computer Science, Dartmouth College	2017 – 2018
	Volunteering	
	Graduate Council Outreach Committee, Harvard University	2020
	A Guide to Your PhD, Harvard SEAS	October 2020
	Project Teach, Harvard University	April 2020
	Cambridge Public Schools STEAM It Up!	October 2019
	Hustle N’ Code Hackathon, <i>technical lead</i>	December 2018
	<i>Hustle N’ Code is a Los Angeles hackathon for youth in public housing.</i>	
	<i>My team won first place, and the four students each received a laptop.</i>	
PRESS	AIhub , Interview with Lily Xu.	October 2021
	Rethinking Economics NL , Disruptive Technologies podcast series.	May 2021
	Engadget , PAWS anti-poaching AI predicts where illegal hunters will show up next.	March 2021
	Mongabay , Where to patrol next: ‘Netflix’ of ranger AI serves up poaching predictions.	November 2020
	Harvard SEAS , Preventing poaching.	June 2020
	BBC Sounds , How tech is tackling wildlife trafficking.	June 2020
	BBC World Service , Using technology to take on poachers.	August 2019
	USC Viterbi Magazine , AI is for Animals.	April 2019
LEADERSHIP	Ledyard Canoe Club at Dartmouth , <i>Secretary, Canoeing Leader</i>	2014 – 2018

- Co-governed club functions for over 100 undergraduates. Managed club assets that include \$1M in endowments, a student-run rental business with annual revenues of \$50K, and boats and equipment valued at \$150K.
- Co-organized an Explorers Symposium featuring ten notable speakers, including Olympic racers and members of National Geographic-sponsored expeditions.
- Led a group of twenty-eight students on a nine-day, 220-mile canoe expedition.
- Voted by my peers to receive the Jay Evans '49 Award for service and commitment to the club.

Fusion Dance Ensemble, *Director* 2014 – 2018

- Led a group of fourteen dancers. Choreographed, taught, and performed contemporary and hip-hop dances.

Dartmouth Sophomore Trips, *Co-director* 2015 – 2016

- Planned the Sophomore Trips program for 130 undergraduates across 14 three-day outdoor trips throughout New Hampshire and Vermont.

Dartmouth First-Year Trips, *Grant Crew Volunteer* Summer 2015

- Served on a nine-person crew for a 21-day, round-the-clock commitment to assist with five-day outdoor orientation trips for 1,000 incoming students.

PERSONAL

Residential member, Los Angeles Eco Village 2018 – 2019