

Lily Xu

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lily-x.github.io

EDUCATION **Harvard University**, Cambridge, MA 2019 – present
PhD Candidate, School of Engineering and Applied Sciences
Advised by Prof. Milind Tambe

Dartmouth College, Hanover, NH 2014 – 2018
A.B. with Honors in Computer Science, minor in Spanish
Magna cum laude

PUBLICATIONS **Robust Reinforcement Learning Under Minimax Regret for Green Security**
Under review
Lily Xu, Andrew Perrault, Fei Fang, Haipeng Chen, Milind Tambe

Envisioning Communities: A Participatory Approach Towards AI for Social Good
Under review
Elizabeth Bondi*, Lily Xu*, Diana Acosta-Navas, Jackson A. Killian
**Equal contribution*

Getting Agents to Reach Better Equilibria: A Gradient-based Optimization Approach
Under review
Kai Wang, Lily Xu, Andrew Perrault, Michael K. Reiter, Milind Tambe

Dual-Mandate Patrols: Multi-Armed Bandits for Green Security
AAAI-21: Thirty-Fifth AAAI Conference on Artificial Intelligence
Lily Xu, Elizabeth Bondi, Fei Fang, Andrew Perrault, Kai Wang, and Milind Tambe
Best Paper Award Runner Up

Enhancing Poaching Predictions for Under-Resourced Wildlife Conservation Parks Using Remote Sensing Imagery
NeurIPS Workshop on Machine Learning for Development 2020
Rachel Guo, Lily Xu, Andrew Plumptre, Drew Cronin, Francis Okeke, and Milind Tambe

Game Theory on the Ground: The Effect of Increased Patrols on Deterring Poachers
Working paper
Appeared at Harvard CRCS Workshop on AI for Social Good 2020
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
Working paper
Appeared at Mechanism Design for Social Good (MD4SG) Workshop 2020
Florian Berlinger*, Lily Xu*, Yiling Chen
**Equal contribution*

Stay Ahead of Poachers: Illegal Wildlife Poaching Prediction and Patrol Planning Under Uncertainty with Field Test Evaluations

ICDE-20: IEEE International Conference on Data Engineering 2020

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

**Equal contribution*

HONORS AND AWARDS	AAAI Best Paper Award Runner Up	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>	
	University of Pittsburgh, CS 1699. AI for Good: Ethics and Implications	Spring 2021
	University of Michigan, SI 431. Algorithms and Society	Spring 2021
	Harvard University, CS 182. Artificial Intelligence	Fall 2020
	Dartmouth College, CS 11. Foundations of Applied Computer Science	Spring 2018

Harvard University*Head Teaching Fellow*

CS 182: Artificial Intelligence

Fall 2020

Dartmouth College*Teaching Assistant, Department of Computer Science*

CS 31: Algorithms

Winter 2017

CS 11: Foundations of Applied Computer Science

Spring 2018

CS 10: Object-Oriented Programming

Spring 2016

CS 10: Object-Oriented Programming

Spring 2015

CS 1: Intro to Programming and Computation

Spring 2018

CS 1: Intro to Programming and Computation

Fall 2017

CS 1: Intro to Programming and Computation

Spring 2017

CS 1: Intro to Programming and Computation

Winter 2016

CS 1: Intro to Programming and Computation

Fall 2015

Teaching Assistant, Tuck School of Business

Tuck FWP: Fundamentals of Web Programming

Spring 2017

Tuck DSA: Data Structures and Analytics

Spring 2017

STUDENTS

Ezenia Diaz-Lembert '23, Harvard College

Spring 2021

MENTORED

Emilia Cabrera '21, Harvard College (co-mentored with Haipeng Chen)

Fall 2020 –

Rachel Guo '22, Harvard College

Summer 2020 –

*NWIT Collegiate Award Finalist***PROFESSIONAL
SERVICE****Program Organization**

Co-lead, MD4SG Community Engagement

October 2020 –

Co-organizer, MD4SG Working Group on Environment and Climate

January 2020 –

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*

AAAI Emerging Track on AI for Social Impact (AISI)

2021

AAAI Emerging Track on AI for Social Impact (AISI)

2020

Workshops

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

ReviewerICML, *subreviewer*

2021

NeurIPS, *subreviewer*

2020

IJCAI Special Track on CompSust and Human Well-being, *subreviewer*

2020

	COMPASS, <i>subreviewer</i>	2019
	Bloomberg Data for Good Exchange (D4GX), <i>subreviewer</i>	2019
LEADERSHIP	Ledyard Canoe Club at Dartmouth, Secretary, Canoeing Leader	2014 – 2018
	<ul style="list-style-type: none"> 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
	<ul style="list-style-type: none"> Led a group of fourteen dancers. Choreographed, taught, and performed contemporary and hip-hop dances. 	
	Dartmouth Sophomore Trips, Co-director	2015 – 2016
	<ul style="list-style-type: none"> 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
	<ul style="list-style-type: none"> 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. 	
INVITED TALKS	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	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	
	SMART Partnership, Webinar for International Women's Day	March 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

Rethinking Economics NL , Disruptive Technologies series (to appear).	April 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

PERSONAL

Residential member, Los Angeles Eco Village	2018 – 2019
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