

# Lily Xu

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lily-x.github.io

EDUCATION	<b>Harvard University</b> , Cambridge, MA PhD Candidate, School of Engineering and Applied Sciences Advised by Prof. Milind Tambe	2019 – present
	<b>Dartmouth College</b> , Hanover, NH A.B. with Honors in Computer Science, minor in Spanish <i>Magna cum laude</i>	2014 – 2018
PUBLICATIONS	<b>Robust Reinforcement Learning Under Minimax Regret for Green Security</b> <i>Under review</i> Lily Xu, Andrew Perrault, Fei Fang, Haipeng Chen, Milind Tambe	
	<b>Getting Agents to Reach Better Equilibria: A Gradient-based Optimization Approach</b> <i>Under review</i> Kai Wang, Lily Xu, Andrew Perrault, Michael K. Reiter, Milind Tambe	
	<b>Envisioning Communities: A Participatory Approach Towards AI for Social Good</b> <i>AIES-21: AAAI/ACM Conference on AI, Ethics, and Society</i> Elizabeth Bondi*, Lily Xu*, Diana Acosta-Navas, Jackson A. Killian <i>*Equal contribution</i>	
	<b>Dual-Mandate Patrols: Multi-Armed Bandits for Green Security</b> <i>AAAI-21: Thirty-Fifth AAAI Conference on Artificial Intelligence</i> Lily Xu, Elizabeth Bondi, Fei Fang, Andrew Perrault, Kai Wang, and Milind Tambe <b>Best Paper Award Runner Up</b>	
	<b>Stay Ahead of Poachers: Illegal Wildlife Poaching Prediction and Patrol Planning Under Uncertainty with Field Test Evaluations</b> <i>ICDE-20: 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	<b>Enhancing Poaching Predictions for Under-Resourced Wildlife Conservation Parks Using Remote Sensing Imagery</b> <i>NeurIPS Workshop on Machine Learning for Development 2020</i> Rachel Guo, Lily Xu, Andrew Plumptre, Drew Cronin, Francis Okeke, and Milind Tambe	
	<b>Game Theory on the Ground: The Effect of Increased Patrols on Detering Poachers</b> <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**

*Working paper*

*Appeared at Mechanism Design for Social Good (MD4SG) Workshop 2020*

Florian Berlinger\*, **Lily Xu\***, Yiling Chen

*\*Equal contribution*

HONORS AND AWARDS	Harvard University Certificate of Distinction in Teaching	2021
	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
RESEARCH EXPERIENCE	Willis S. Fitch '17 Metropolitan Washington Scholarship	2015
	Bank of America’s Joe Martin Scholarship	2014
	<b>Harvard University</b> , Cambridge, MA	
	<i>Doctoral Research Assistant</i>	2019 – present
	Advised by Prof. Milind Tambe	
	<b>University of Southern California</b> , Los Angeles, CA	
	<i>Doctoral Research Assistant</i>	2018 – 2019
	Advised by Prof. Bistra Dilkina and Prof. Milind Tambe	
	<b>Dartmouth College</b> , 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	<b>Google</b> , Seattle, WA	
	<i>Software Engineering Intern</i>	Summer 2017
TEACHING EXPERIENCE	<b>Dyn, Inc.</b> , Hanover, NH	
	<i>Data Analytics Research Intern</i>	Spring 2016
	<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
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### 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
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Tuck DSA: Data Structures and Analytics	Spring 2017
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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 –
	<i>NCWIT Collegiate Award Winner</i>	

### 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*

COMPASS	2021
AAAI Emerging Track on AI for Social Impact (AISI)	2021
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*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

	<b>Reviewer</b>	
	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
LEADERSHIP	<b>Ledyard Canoe Club at Dartmouth, Secretary, Canoeing Leader</b>	2014 – 2018
	<ul style="list-style-type: none"> <li>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.</li> <li>Co-organized an Explorers Symposium featuring ten notable speakers, including Olympic racers and members of National Geographic-sponsored expeditions.</li> <li>Led a group of twenty-eight students on a nine-day, 220-mile canoe expedition.</li> <li>Voted by my peers to receive the Jay Evans '49 Award for service and commitment to the club.</li> </ul>	
	<b>Fusion Dance Ensemble, Director</b>	2014 – 2018
	<ul style="list-style-type: none"> <li>Led a group of fourteen dancers. Choreographed, taught, and performed contemporary and hip-hop dances.</li> </ul>	
	<b>Dartmouth Sophomore Trips, Co-director</b>	2015 – 2016
	<ul style="list-style-type: none"> <li>Planned the Sophomore Trips program for 130 undergraduates across 14 three-day outdoor trips throughout New Hampshire and Vermont.</li> </ul>	
	<b>Dartmouth First-Year Trips, Grant Crew Volunteer</b>	Summer 2015
	<ul style="list-style-type: none"> <li>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.</li> </ul>	
INVITED TALKS	<b>PAWS: AI to Predict and Plan Against Poaching</b>	
	International Congress for Conservation Biology, Kigali, Rwanda	December 2021
	SMART Partnership, Webinar for International Women's Day	March 2021
	<b>Dual-Mandate Patrols: Multi-Armed Bandits for Green Security</b>	
	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
	<b>Poaching Prediction and Patrol Planning Under Uncertainty</b>	
	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	<b>Public Events</b>	
	AI LA Earth Summit	April 2021
	South by Southwest (SXSW), Wildlife AI Panel	March 2021

World Science Festival, Science and Storytime	June 2019
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### 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, AInnovation 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

<b>Rethinking Economics NL</b> , Disruptive Technologies series (to appear).	April 2021
<b>Engadget</b> , PAWS anti-poaching AI predicts where illegal hunters will show up next	March 2021
<b>Mongabay</b> , Where to patrol next: 'Netflix' of ranger AI serves up poaching predictions.	November 2020
<b>Harvard SEAS</b> , Preventing poaching.	June 2020
<b>BBC Sounds</b> , How tech is tackling wildlife trafficking.	June 2020
<b>BBC World Service</b> , Using technology to take on poachers.	August 2019
<b>USC Viterbi Magazine</b> , AI is for Animals.	April 2019

### PERSONAL

Residential member, Los Angeles Eco Village	2018 – 2019
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