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

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

Envisioning Communities: A Participatory Approach Towards AI for Social Good
AIES-21: AAAI/ACM Conference on AI, Ethics, and Society
Elizabeth Bondi*, **Lily Xu***, Diana Acosta-Navas, Jackson A. Killian
*Equal contribution

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

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

WORKSHOP PAPERS **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

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

Special distinction rarely awarded by faculty members "for meritorious characteristics not indicated adequately by academic grades."
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

For "intellectual openness, enthusiasm, and impressive academic performance" following a study abroad program in Cusco, Peru. Award in $1,500.

	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	
	Doctoral Research Assistant	2019 – present
	Advised by Prof. Milind Tambe	
	University of Southern California, Los Angeles, CA	
	Doctoral Research Assistant	2018 – 2019
	Advised by Prof. Bistra Dilkina and Prof. Milind Tambe	
	Dartmouth College, Hanover, NH	
	Undergraduate Senior Thesis Researcher	2017 – 2018
	Advised by Prof. Amro Farid	
	Presidential Scholar Research Assistant	2016 – 2017
	Advised by Prof. Emily Whiting and Prof. David Kotz	

WORK EXPERIENCE	**Google**, Seattle, WA	
	Software Engineering Intern	Summer 2017
	Dyn, Inc., Hanover, NH	
	Data Analytics Research Intern	Spring 2016

TEACHING EXPERIENCE	*Guest Lecturer*	
	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 Mentored

Ezenia Diaz-Lembert '23, Harvard College   Spring 2021
Emilia Cabrera '21, Harvard College (co-mentored with Haipeng Chen) Fall 2020 –
Rachel Guo '22, Harvard College   Summer 2020 –
   NCWIT 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
COMPASS   2021
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

Reviewer

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

LEADERSHIP

Ledyard Canoe Club at Dartmouth, *Secretary, Canoeing Leader*   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.

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

Harvard Tech for Social Good, *panelist*	April 2021
SMART Partnership, Webinar for International Women's Day	March 2021

Harvard SEAS PhD Admitted Students Open House, *panelist*	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, *panelist*	May 2020
Harvard SEAS Diversity, Inclusivity, and Belonging, *panelist*	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, *technical lead*	December 2018

Hustle N' Code is a Los Angeles hackathon for youth in public housing.
My team won first place, and the four students each received a laptop.

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