

Rachel Ma

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EDUCATION

Massachusetts Institute of Technology

Sept 2023 - Present

S.M and Ph.D. in Electrical Engineering and Computer Science

- Research: AI (NLP, Vision, Foundation Models, Robotics) to help with better decision making and reasoning for alignment between humans and autonomous agents/systems for assisting humans with everyday tasks, or human robot interaction. I am interested in enabling both personalization to human preferences, while maintaining generalized agents.
- Relevant classes: Robotic Manipulation (A), Computer Vision (A), current: TinyML and Efficient DL, Advanced Algorithms
- Activities: Graduate Women in Course 6 (GW6) Co-President, Graduate Women in Robotics

Brown University

Sept 2019 - May 2023

B.Sc in Computer Science (Honors), A.B in Music (Honors)

- Honors Theses: “Skill Generalization With Verbs” (CS), “Odyssey” (Music)
- Relevant Coursework: Artificial Intelligence, Intro to Comp. Systems, Computer Vision, Collaborative Robotics, Theory of Computation, Software Security Exploitation, User Interface & Experience, Deep Learning, Discrete Struc. & Probability, Linear Algebra, Statistics, Multivariable Calculus
- Activities: U/H/M Teaching Assistant, Alpha Chi Omega, Chamber Music, Meiklejohn Peer Advisor

RESEARCH PUBLICATIONS

Goal Inference from Open-Ended Dialog: R.Ma, J.Qu, A.Bobu, D.Hadfield-Menell, International Conference on Robotics and Automation (ICRA) 2025. In Submission.

Learning to Search from Belief-Space Plans: P.JK.Christofferson, R.Ma, D. Hadfield-Menell, International Conference on Robotics and Automation (ICRA) 2025. In Submission.

Learning Human Preferences Through Open-Ended Dialogue: R. Ma, D. Hadfield-Menell, in the Generative Modeling meets HRI Workshop at Robotics: Science and Systems (RSS) 2024. Runner Up Best Paper.

Skill Generalization With Verbs: R. Ma, L. Lam, B.A. Spiegel, A. Ganeshan, B. Abbatematteo, R. Patel, D. Paulius, S. Tellex, G. Konidaris, in the International Conference for Intelligent Robots and Systems (IROS) 2023.

RESEARCH EXPERIENCES

Graduate Researcher — *Algorithmic Alignment Group*

Sept 2023 - Present

- Supervisor: Dylan Hadfield-Menell
- Goal Inference from Open-Ended Dialog paper: proposed extracting natural language goals and method for goal inference, with help from LLMs, from open-ended dialogue between an agent and a human with preferences to assist with tasks. Learning to Search from Belief-Space Plans paper: Drake: Manipulation simulation for Spot robot

Robotics and NLP Researcher — *Intelligent Robot Lab, Humans To Robots Lab*

Jan 2022 - Aug 2023

- Supervisors: George Konidaris and Stefanie Tellex
- Led research in robotics and natural language processing through transferring skills (verb actions) across different objects from ideation to submitted paper (first author).

Choreo-Robotics Researcher — *Humans To Robots Lab*

Jan 2021 - Dec 2021

- Supervisors: Stefanie Tellex
- Led beat detection project to develop reactive dancing robots, worked with Spot and Baxter robots
- Helped with grant writing and designing curriculum for *Choreo-robotics 101*.

Drone and STEM Education Research — *Humans To Robots Lab*

March 2020 - Dec 2021

- Robotics Research Assistant, Project Manager, Communications Lead; Supervisors: Stefanie Tellex
- Led meetings, developed curriculum, organized training and outreach, and led tech support for high schools.
- Research with autonomous drones and systems: build drones, used ROS, localization and PID control

Teaching/Peer Mentoring Experiences

Meta Teaching Assistant — *Brown University, Computer Science Dpt.*

Oct 2021 - May 2023

- One of two MTAs who coordinated the CS TA program, managed and led 60 HTAs and 400 UTAs each semester
- Communicated between undergrads, technical staff, and CS faculty and represented the CS department at Brown events.

Head Teaching Assistant — *Brown University, Computer Science Dpt.*

- Introduction to Discrete Math and Probability Structures (CS0220) Spring 2022
- Artificial Intelligence (CS1410) Fall 2021
- Administrative duties, course development, auto-grader scripts, trained and led class UTAs, UTA duties

Undergraduate Teaching Assistant — *Brown University, Computer Science Dpt.*

- Cybersecurity and International Relations (CS1800) Spring 2021
- Computing Foundations: Data (CS0111) Fall 2020
- Held TA hours for students, assignment development, led lab sections and discussions, graded assignments and projects.

Undergraduate Lab Teaching Assistant — *Brown University, Music Dpt.*

- Keyboard lab TA for all intro music theory classes (MUSC400A, MUSC400B, MUSC550) Fall 2021

Meiklejohn Peer Advisor — *Brown University*

Sept 2020 - May 2022

- Peer advisor to 1st years interesting in Computer Science or Engineering

AWARDS

MIT Presidential Fellowship	Sept 2023 - May 2024
Norman K. Meyrowitz Award	May 2023, Brown CS Department
MH. Mann Premium Award	May 2023, Brown Music Department
Honorable Mention for Computing Research Association (CRA) Outstanding Undergraduate Researcher Award	Dec 2022
Molly and David Wadhvani Foundation Meta UTAship in honor of Andy van Dam	Fall 2022, Brown CS department
Norm Meyrowitz '81 Meta-TAship in honor of Ugur Cetintemel	Spring 2022, Brown CS department
Margery MacColl Award	2021, Brown Music department
Karen T. Romer Undergraduate Teaching and Research Awards (UTRA)	Summer 2021, Brown University
Karen T. Romer Undergraduate Teaching and Research Awards (UTRA)	Summer 2020, Brown University

PROGRAMMING LANGUAGES: Python, C/C++, Java, Assembly, LaTeX, CSS/HTML, SQL, Pyret/Racket.

OTHER EXPERIENCES/HOBBIES

Graduate Women in Course 6 (GW6) — *Co-President, MIT*

Dec 2023 - Present

Alpha Chi Omega — *Various chair positions, Brown University*

Feb 2021 - May 2023

Piano

2006 - Present

- Licentiate Diploma (LRCM), Associate Diploma (ARCT) in Piano Performance from the Royal Conservatory of Music (RCM) 2019, 2016
- Active as a piano soloist, chamber musician (duos and piano trio), accompaniment, large ensemble work
- Recordings from performances at Brown: <https://youtu.be/LjCFzkgYXkY>, <https://youtu.be/wTzGq1DfR9I>, <https://youtu.be/lqPQboKMYNI?t=4066>

Composition

2014 - Present

- Composed and recorded pieces for a variety of music ensembles (duos, quintet, wind orchestra, symphony).