

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 (foundation models, NLP, Vision) with Robotics intersections for better Human Autonomous Systems/Agents/Robot alignment and interactions
- 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.

Generalizable Skills 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.

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

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| 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).