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Eric Rosen

Education

2018 – Present **PhD Candidate in Computer Science**, *Brown University*, Providence, RI.
Research areas are in Artificial Intelligence, Machine Learning, and Robotics. Coursework included: Learning and Sequential Decision Making, Computer Vision, Computational Semantics, Computational Linguistics, Design and Implementation of Programming Languages

2018 – 2020 **Masters of Computer Science**, *Brown University*, Providence, RI.

2014 – 2018 **Bachelor of Science in Computer Science and Applied Mathematics**, *Brown University*, Providence, RI.
Received Bachelor's degrees with honors in Computer Science and Applied Mathematics. Coursework included: Applied Artificial Intelligence, Machine Learning, Neural Modeling Laboratory, Computing and Probability, Design and Analysis of Algorithms, Operations Research: Probabilistic Models, Operations Research: Deterministic Models, Digital Signal Processing

Publications

Journal Papers

IJRR 2019 **Communicating and Controlling Robot Arm Motion Intent Through Mixed-Reality Head-Mounted Displays**, *Eric Rosen, David Whitney, Daniel Ullman, Elizabeth Phillips, Stefanie Tellex*.

Conference Papers

RO-MAN 2022 **Norm Learning with Reward Models from Instructive and Evaluative Feedback**, *Eric Rosen, Eric Hsiung, Vivienne Bihe Chi, Bertram F Malle*.

HRI 2022 **Learning reward functions from a combination of demonstration and evaluative feedback**, *Eric Hsiung, Eric Rosen, Vivienne Bihe Chi, Bertram F Malle*.

IROS 2021 **Bootstrapping Motor Skill Learning with Motion Planning**, *Eric Rosen, Ben Abbatematteo, Stefanie Tellex, George Konidaris*.

HRI 2021 **A VR Teleoperation Suite with Manipulation Assist**, *Christian Barentine,Andrew McNay, Ryan Pfaffenbichler, Addyson Smith, Eric Rosen, Elizabeth Phillips*.

IROS 2020 **Building Plannable Representations with Mixed Reality**, *Eric Rosen, Nishanth Kumar, Nakul Gopalan, Daniel Ullman, Stefanie Tellex, George Konidaris*.

Best Paper Finalist IROS 2020 **Mixed Reality as a Bidirectional Communication Interface for Human-Robot Interaction**, *Eric Rosen, David Whitney, Michael Fishman, Daniel Ullman, Stefanie Tellex*.

RO-MAN 2020 **A General Methodology for Teaching Norms to Social Robots**, *Bertram Malle, Eric Rosen, Vivienne Bihe Chi, Matthew Berg, Peter Haas*.

RSS 2020 **Simultaneously Learning Transferable Symbols and Language Groundings from Perceptual Data for Instruction Following**, *Nakul Gopalan, Eric Rosen, Stefanie Tellex, George Konidaris*.

ICRA 2019 **End-User Robot Programming Using Mixed Reality**, *Samir Yitzhak Gadre, Eric Rosen, Gary Chien, Elizabeth Phillips, Stefanie Tellex, George Konidaris*.

IROS 2018 **ROS Reality: A Virtual Reality Framework Using Consumer-Grade Hardware for ROS-Enabled Robots**, *Eric Rosen, David Whitney, Daniel Ullman, Elizabeth Phillips, Stefanie Tellex*.

ICRA 2017 **Reducing Errors In Object-Fetching Interactions Through Social Feedback**, *David Whitney, Eric Rosen, James MacGlashan, Lawson LS Wong, Stefanie Tellex*.

Magazine Articles

IEEE 2022 **A Tool for Organizing Key Characteristics of Virtual, Augmented, and Mixed Reality for Human–Robot Interaction Systems: Synthesizing VAM-HRI Trends and Takeaways**, *Thomas Groechel, Michael Walker, Christine T Chang, Eric Rosen, Jessica Forde*.

Symposium Papers

SIEDS 2020 **Comparing Virtual Reality Interfaces for the Teleoperation of Robots**, *Rebecca Hetrick, Nicholas Amerson, Boyoung Kim, Eric Rosen, Ewart J. de Visser, and Elizabeth Phillips*.

ISRR 2017 **Comparing Robot Grasping Teleoperation Across Desktop And Virtual Reality With ROS Reality**, *David Whitney, Eric Rosen, Elizabeth Phillips, George Konidaris, Stefanie Tellex*.

ISRR 2017 **Communicating robot arm motion intent through mixed reality head-mounted displays**, *Eric Rosen, David Whitney, Elizabeth Phillips, George Konidaris, Stefanie Tellex*.

Workshop Papers

CoRL 2022 **On the Role of Structure in Manipulation Skill Learning**, *Eric Rosen, Ben Abbatematteo, Skye Thompson, Tuluhan Akbulut, George Konidaris*.

NeurIPS 2022 **Planning With Large Language Models Via Corrective Re-Prompting**, *Shreyas Sundara Raman, Vanya Cohen, Eric Rosen, Ifrah Idrees, David Paulius, Stefanie Tellex*.

VAM-HRI 2022 **Learning robot motor skills with mixed reality**, *Eric Rosen, Sreehari Rammohan, Devesh Jha*.

RSS 2021 **Leveraging Temporal Structure in Safety-Critical Task Specifications for POMDP Planning**, *Jason Liu, Eric Rosen, Suchen Zheng, Stefanie Tellex, George Konidaris*.

RSS 2021 **Value-Based Reinforcement Learning for Continuous Control Robotic Manipulation in Multi-Task Sparse Reward Settings**, *Sreehari Rammohan, Shangqun Yu, Bowen He, Eric Hsiung, Eric Rosen, Stefanie Tellex, George Konidaris*.

HRI 2021 **Manipulation Assist for Teleoperation in VR** , *Christian Barentine,Andrew McNay, Ryan Pfaffenbichler, Addyson Smith, Eric Rosen, Elizabeth Phillips*.

RSS 2021 **RBF-DQN for Continuous Control Robotic Manipulation in Multi-Task Sparse Reward Settings**, *Sreehari Rammohan, Shangqun Yu, Bowen He, Eric Hsiung, Eric Rosen, Stefanie Tellex*.

ICRA 2020 **Locally Observable Markov Decision Processes**, *Max Merlin, Naveen Parikh, Eric Rosen, George Konidaris*.

RSS 2019 **Mapping Language to Transferable Symbols For Instruction Following**, *Nakul Gopalan, Eric Rosen, Stefanie Tellex.*

VAM-HRI 2019 **Knowledge Acquisition for Robots Through Mixed Reality Head-Mounted Displays**, *Eric Rosen, Nishanth Kumar, Stefanie Tellex.*

VAM-HRI 2018 **Learning from Crowdsourced Virtual Reality Demonstrations**, *David Whitney, Eric Rosen, Stefanie Tellex.*

VAM-HRI 2018 **Testing Robot Teleoperation Using A Virtual Reality Interface With ROS Reality**, *Eric Rosen, David Whitney, Elizabeth Phillips, Daniel Ullman, Stefanie Tellex.*

Service

VAM-HRI @ HRI20-23 **Co-Chair Organizer**.

Work Experience

Fall 2022 **Mitsubishi Electric Research Laboratories (MERL) Part-time Researcher**, Boston, MA.

Researched algorithms for motor skill learning and Virtual Reality interfaces for human-robot interaction.

Fall 2021 **Facebook Reality Labs Part-time Researcher**, Redmond, WA.

Worked on developing research and writing paper publications on deep learning for activity recognition.

Summer 2021 **Facebook Reality Labs R&D Internship**, Redmond, WA.

Developed deep learning design patterns and models for activity recognition using motion sensor for mixed reality platforms.

Summer 2020 **Uber ATG R&D Internship**, San Francisco, CA.

Developed deep learning architectures to improve end-to-end motion planning for self-driving vehicles.

Summer 2017 **Amazon Robotics R&D Internship**, North Reading, MA.

Researched machine learning techniques to improve robot manipulation in Amazon warehouses with multimodal feedback.

2014 – 2018 **Undergraduate Research Assistant**, *Brown University*, Providence, RI.

Assisted and conducted published research in Humans to Robots Laboratory and Intelligent Robot Laboratory. ROS for programming robots, Java for probabilistic planning, Python for deep learning.

Teaching Experience

Spring 2022 **Instructor for Choreorobotics 101**, *Brown University*, Providence, RI.

Created syllabus, course content, and curriculum for a new interdisciplinary course at Brown. Taught lectures on robotics and how to choreograph dances on the Boston Dynamic's Spot robot. Bridged vocabulary and concepts from choreography to robotics and helped students learn how to practically work with robots to create dance performances.

Fall 2018 **Head Graduate Teacher Assistant for Introduction to Robotics**, *Brown University*, Providence, RI.
Reviewed curriculum generation for building drones and the software stacks for perception and robotic control. Verified solutions to mathematical homework problems. Held office hours to help students debug and setup robot software.

Fall 2016, 2017 **Head Teacher Assistant for Topics in Grounding Language for Robotics**, *Brown University*, Providence, RI.
Helped students develop and propose research projects for intelligent robot applications. Reviewed student project submissions and gave feedback for improvements on assignments. Taught students how to conduct independent research.

Spring 2017 **Head Teacher Assistant for Applied Artificial Intelligence**, *Brown University*, Providence, RI.
Led development for software assignments and support code for assignments. Help grade student software and mathematical homework. Held office hours to help students with code or questions regarding topics on artificial intelligence.

Summer 2016, 2017, 2018 **Teacher Assistant for Summer@Brown STEM II Program**, *Brown University*, Providence, RI.
Taught students how to use Arduinos and program in C#. Assisted students in classes with hardware and software problems. Helped students develop independent projects for introduction to computational research.

2015-2021 **President and Lead Instructor of igniteCS**, *Brown University*, Providence, RI.
Created Computer Science curriculum for K-12 students. Taught and mentored students for weekly club meetings at over 10 schools in the greater Providence area. Led over 50 volunteers for teaching over 200 K-12 students for Hour of Code week over 7 years.

Awards and Honours

2019 **The IBM Watson AI XPRIZE Runner-up**, *XPRIZE Foundation*.
A $5 million dollar challenge where 59 selected teams demonstrate how humans can collaborate with powerful artificial intelligence (AI) technologies to tackle some of the world's greatest challenges. Nominated and proposed a three-phase interdisciplinary research program to identify human social and moral norms and implement them in robots.

2019 **Analog Devices Realtime Sensor Fusion Challenge Runner-up**, *Analog Devices*.
An innovation challenge for engineering students and startups to enhance context awareness in robotic system by fusing sensor data. Nominated and proposed solutions for fusing RGB-D, IMU, and thermal sensor data for enhancing the production of action maps in robot applications.

2019 **Hyundai Visionary Challenge Winner**, *Hyundai, Brown University*.
A competition to accelerate research innovations in smart mobility that drive the creation of sustainable cities across the globe. Developed a multi-modal model for human-robot interaction involving goal specification and planning verification.

2018 **Honorable Mention for Outstanding Undergraduate Researchers from Computing Research Association (CRA)**.

2018 **Outstanding Undergraduate Research Award**, *Brown University*.
Given for best research amongst undergraduates in Computer Science at Brown University

2018 **Most Innovative Award**, *Hack@Brown*.
Awarded for building Seereal: An Augmented Reality app that uses cereal box packages as image targets in order to create a more engaging breakfast experience.

2017 **Best User Experience Award**, *Hack@Brown*.
Awarded for building SommeliAR: A Mixed Reality wine tasting experience.

Skills

Computing LaTeX, Python, Pytorch, ROS, Unity, Linux

Language English (native)