

SHEN LI

shenli@mit.edu

<http://people.csail.mit.edu/shenli/>

Education

Massachusetts Institute of Technology 08/19–

Ph.D. in Aeronautics and Astronautics

Research Advisor: [Prof. Julie Shah](#)

Carnegie Mellon University 08/15–05/17

M.S. in Robotics

Research Advisor: [Prof. Siddhartha Srinivasa](#) and [Prof. Stephanie Rosenthal](#)

The Pennsylvania State University 08/11–05/15

B.S. in Computer Science and B.S. in Psychology, both with high distinction

Publications¹

Peer-Reviewed Conference Papers

- 11 **Shen Li**, Nadia Figueroa, Ankit Shah, and Julie Shah. [Provably Safe and Efficient Motion Planning under Uncertainty for Human-Robot Collaboration](#). RSS. 2021.
- 10 **Shen Li***, Daehyung Park*, Yoonchang Sung*, Julie Shah, and Nicholas Roy. [Reactive Task and Motion Planning under Temporal Logic Specifications](#). ICRA. 2021.
- 9 Vaibhav Unhelkar*, **Shen Li***, and Julie Shah. [Decision-Making for Bidirectional Communication in Sequential Human-Robot Collaborative Tasks](#). HRI. 2020. (23.6%).
- 8 Ankit Shah, **Shen Li**, and Julie Shah. [Planning With Uncertain Specifications \(PUnS\)](#). RA-L & ICRA. 2020.
- 7 Vaibhav Unhelkar*, **Shen Li***, and Julie Shah. [Semi-Supervised Learning of Decision-Making Models for Human-Robot Collaboration](#). CoRL. 2019. (Oral presentation 5%).
- 6 **Shen Li** and Julie Shah. [Safe and Efficient High Dimensional Motion Planning in Space-Time with Time Parameterized Prediction](#). ICRA. 2019.
- 5 Tariq Iqbal, **Shen Li**, Christopher Fourie, Bradley Hayes, and Julie Shah. [Fast Online Segmentation of Activities from Partial Trajectories](#). ICRA. 2019.
- 4 Ankit Shah, Pritish Kamath, **Shen Li**, and Julie Shah. [Bayesian Inference of Temporal Task Specifications from Demonstrations](#). NeurIPS. 2018.
- 3 Changjoo Nam, Huao Li, **Shen Li**, Michael Lewis, and Katia Sycara. [Trust of Humans in Supervisory Control of Swarm Robots with Varied Levels of Autonomy](#). SMC. 2018.
- 2 **Shen Li***, Rosario Scalise*, Henny Admoni, Stephanie Rosenthal, and Siddhartha Srinivasa. [Evaluating Critical Points in Trajectories](#). RO-MAN. 2017.

¹* Both authors contributed equally

- 1 **Shen Li***, Rosario Scalise*, Henny Admoni, Stephanie Rosenthal, and Siddhartha Srinivasan. [Spatial References and Perspective in Natural Language Instructions for Collaborative Manipulation](#). RO-MAN. 2016.

Peer-Reviewed Journal Articles

- 2 Ankit Shah, Pritish Kamath, **Shen Li**, Patrick Craven, Kevin Landers, Kevin Oden, and Julie Shah. [Supervised Bayesian Specification Inference from Demonstrations](#). IJRR. 2019. (In review).
- 1 Rosario Scalise*, **Shen Li***, Henny Admoni, Stephanie Rosenthal, and Siddhartha Srinivasan. [Natural Language Instructions for Human-Robot Collaborative Manipulation](#). IJRR. 2018.

Peer-Reviewed Workshop Papers

- 1 **Shen Li***, Rosario Scalise*, Henny Admoni, Stephanie Rosenthal, and Siddhartha Srinivasan. [Perspective in Natural Language Instructions for Collaborative Manipulation](#). R:SS Workshop on Model Learning for Human-Robot Communication. 2016.

Thesis

- 1 **Shen Li**. [Automatically Evaluating and Generating Clear Robot Explanations](#). Master's thesis. Carnegie Mellon University. 2017.

Academic Services

Reviewer for HRI	2018, 2019, 2020, 2021
Reviewer for THRI	2019, 2020
Reviewer for RAL	2019, 2021
Reviewer for IROS	2021
Reviewer for Autonomous Robots	2020
Reviewer for Humanoids	2020
Reviewer for Frontiers	2020
Reviewer for AAMAS	2018, 2019
Reviewer for Journal of Behavioral Robotics	2018
Reviewer for SMC	2018
Reviewer for RO-MAN	2016, 2017, 2018

Media Publicity

ZDNet: <i>MIT work raises a question: Can robots be teammates with humans rather than slaves?</i>	04/21/20
MIT News: <i>Showing robots how to do your chores - By observing humans, robots learn to perform complex tasks, such as setting a table.</i>	03/05/20
PBS NewsHour: <i>The robots are coming. Will they work with us?</i>	12/18
IEEE - The Institute page: <i>IEEE Members Build Robots to Help People with Disabilities Live Independently</i>	06/17
Y-combinator: <i>Why Did the Robot Do That? Increasing Trust in Autonomous Robots</i>	12/16

Research Experience

Interactive Robotics Group, MIT

07/17-

Research Specialist, supervised by [Prof. Julie Shah](#)

Developing a motion-level POMDP with macro actions to plan a 6-DOF
◦ manipulator to leverage the uncertainty about the latent states in a learned human model.

Developed a motion planner to enable a 6-DoF robot to avoid a fast-moving human hand by searching for a safe trajectory with the minimal execution time within space and time.

[ICRA'19](#)

Developed a human motion predictor in navigation tasks and implemented an optimal motion planner to search for safe and efficient trajectories within space and time.

Integrated navigation, manipulation, and grasping planners, along with an activity recognition and segmentation system to enable a robot to fetch and deliver correct parts to humans at appropriate times in factory settings.

[ICRA'19](#)

Advanced Agent-Robotics Technology Lab, CMU

05/17-07/17

Extern, supervised by [Prof. Katia Sycara](#)

Implemented an algorithm to enable swarm robots to perform a target foraging task in an initially unknown environment.

[SMC'18](#)

Personal Robotics Lab, CMU

08/15-05/17

M.S. Researcher,

advised by [Prof. Siddhartha Srinivasa](#) and [Prof. Stephanie Rosenthal](#)

Designed a user study to investigate how critical points in demonstrations of robot paths could shape humans' understanding of robot cost functions and prediction of robot paths in the future.

[RO-MAN'17](#)

Applied the visual and spatial attributes to a referring expression generation algorithm and expedited it via pruning and heuristics.

[M.S. Thesis'17](#)

Crowdsourced a corpus of referring expressions and extracted the visual and spatial attributes with their visual and linguistic saliences from it.

[IJRR'18](#)
[RO-MAN'16](#)
[R:SS WS'16](#)

Intelligent Vehicles and Systems Laboratory, Penn State

05/14-07/14

Undergraduate Researcher, advised by [Prof. Sean Brennan](#)

Implemented the Hough Transform and ray-casting algorithm to enable
◦ an autonomous wheelchair to find obstacle-free steering directions with a LiDAR and expedited this process via Split-and-Merge.

Assembled, calibrated, and programmed a sensing system for stair and curb detection.

Human Performance Rhythms Laboratory, Penn State 08/13-12/14
Undergraduate Researcher,
advised by [Prof. Frederick Brown](#) and [Prof. Cynthia Lajambe](#)
◦ Conducted psychological experiments about sleep deprivation.
◦ Implemented the psychomotor vigilance task for psychological studies
◦ about the effects of sleep deprivation on human alertness and voice.

Access Control List Research, Penn State 09/13-12/13
Undergraduate Researcher, advised by [Prof. Anna Squicciarini](#)
◦ Designed and implemented an online user study interface to investigate
◦ how people affect each other in group decision-making processes.

Awards and Honors

Full scholarship from advisors at Carnegie Mellon University 01/16-05/17
Member of the Honor Society of Phi Kappa Phi 2014-
Dean's List in all terms at Penn State 08/11-05/15
B.S. degrees with high distinction in 05/09/15
both computer science and psychology from Penn State