

# Rafi HAYNE

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## EDUCATION

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- OCT 16 | *Master of Science in Computer Science* - WORCESTER POLYTECHNIC INSTITUTE  
Thesis: Toward Enabling Safe & Efficient Human-Robot Manipulation in Shared Workspaces  
GPA: 3.66
- MAY 15 | *Bachelor of Science in Computer Science* - WORCESTER POLYTECHNIC INSTITUTE  
GPA: 3.8, High Distinction

## EXPERIENCE

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- MAY 15 | *Research Assistant* - AUTONOMOUS ROBOTIC COLLABORATION LAB
- OCT 16 | Developed cost functions to be used in trajectory optimization which allow a robot to reason about workspace constraints that arise when working alongside a human. Built a human gaze tracker to be used as a feature in robot motion planning. Created a robot motion policy that altered trajectories to convey intent in response to human attention.
- SEPT 14 | *Undergraduate Research Assistant* - AUTONOMOUS ROBOTIC COLLABORATION LAB
- MAY 15 | Assisted in a project that attempted to learn feature weights of a cost function that would describe human reaching motions in collaborative settings. Conducted and recorded user studies with two partners manipulating objects in a shared workspace to build a dataset of collaborative reaching motions. Implemented and compared various supervised classifiers for automatic segmentation of human reaching motions.
- MAY 14 | *Summer Undergraduate Research Fellow* - AUTONOMOUS ROBOTIC COLLABORATION LAB
- AUG 14 | Implemented human motion recording and viewing software for the OpenRAVE simulation environment using a VICON motion capture system. Human motions could be viewed in real time or played back frame by frame for motion segmentation.
- MAY 13 | *Summer Undergraduate Research Assistant* - AUTONOMOUS ROBOTIC COLLABORATION LAB
- AUG 13 | Created rudimentary motion capture system utilizing microsoft kinect. Implemented supervised human-reaching motion classifier which classified partial observations of reaching motions into reaching classes based on goal region.

## PEER-REVIEWED JOURNAL ARTICLES

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- [1] J. Mainprice, R. Hayne, and D. Berenson, "Goal set inverse optimal control and iterative replanning for predicting human reaching motions in shared workspaces", *Transactions on robotics*, vol. 32, no. 4, pp. 897–908, Aug. 2016.

## PEER-REVIEWED CONFERENCE PAPERS

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- [2] R. Hayne, R. Luo, and D. Berenson, "Considering avoidance and consistency in motion planning for human-robot manipulation in a shared workspace", in *ICRA*, May 2016.
- [3] J. Mainprice, R. Hayne, and D. Berenson, "Predicting human reaching motion in collaborative tasks using inverse optimal control and iterative re-planning", in *ICRA*, May 2015.

## SKILLS

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Languages: C++, Python, MATLAB  
Tools: Git, ROS, OpenRAVE  
OS: Linux, Windows, OS X