

Jayam Patel

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INDUSTRY EXPERIENCE

Perception Algorithm Developer, LeddarTech July. 2021 – Present

- Enhancing ADAS and AD through AI-driven sensor fusion for improved vehicle safety
- Design path-planning algorithms, decision maker, and localization system for the autonomous vehicle

Advisory Board, EdCalibre Inc. Apr. 2021 – Present

- Advice on technical content to gamify mathematical concepts for school students
- Research on technical interfaces to better suite the gamification

Robotics Career Consultant, Boarding Pass For Success May 2018 – Present

- Mentoring students around the world to help them build a career in robotics
- Introduce research methodologies and tools to students

EDUCATION

Ph.D. in Robotics Engineering May 2021

Worcester Polytechnic Institute (WPI), USA

- Thesis: Improving Human Performance in Multi-Human Multi-Robot Interaction

Certificate in College Teaching May 2019

Higher Education Consortium of Central Massachusetts (HECCMA), USA

- Professional training on the trends of teaching methods and student psychology

M.S. in Robotics Engineering May 2016

Worcester Polytechnic Institute (WPI), USA

- Thesis: Gesture-Based Navigation and Localization of a Smart Wheelchair using Fiducial Markers

B.Eng. in Electronics and Communication Engineering May 2012

Gujarat Technological University (GTU), India

- Final Project: Advanced Reliable Intelligent and Efficient Security System (ARIESS)

CAREER HIGHLIGHTS

Presented research at 7 colloquiums and conferences

Research supervisor to 4 graduate students and 13 undergraduate students at WPI, USA

Academic manuscript reviewer for 4 renowned journals and 8 prestigious conferences

Invited as a speaker for STEM and robotics outreach program for 35+ schools (10000+ students) across India

Recognition by Shri Narendra Modi, Prime Minister of India, for intellectual contribution to the field of Robotics

Patent applied (File No. 1584/MUM/2013) for *Security System* that isolates valuables & humans from the culprit

Certificate for academic excellence (B.Eng. Batch Topper) at Gujarat Technological University, India

Robotics trainer and mentor in basic robot building workshops to 100+ students, 9-35 years old, India

KEY SKILLS

Programming: Python, C++, C#, Buzz, C, MATLAB, HTML, LaTeX

Robotic Tools: RTMaps, ARGoS, ROS, Gazebo, RVIZ, MoveIt

Hardware: Magic Leap, Leap Motion, MYO/EMG Sensor, Atmel, Arduino, MSP430, ARM, 89cXX-80xx Series

Software Tools: PyTorch, Git, Docker, Unity, Vuforia, SPSS, VS Code, SVN, Qt Creator, PyCharm, MATLAB & Simulink

RESEARCH EXPERIENCE

Research Assistant, NEST Lab, Worcester Polytechnic Institute, USA Aug. 2016 – May 2021

Supervisor: *Prof. Carlo Pinciroli*

- Built a multi-human multi-robot framework as mixed reality-based and a cloud-based interface
- Investigated the impact of mixed-granularity of control, information transparency, inter-human communication and loss of information on human operators' performance

Research Assistant, RIVeR Lab, Worcester Polytechnic Institute, USA Aug. 2014 – Apr. 2016

Supervisor: *Prof. Taskin Padir*

- Worked on a gesture-based navigation technique to manipulate a smart wheelchair for the elderly and the specially-abled
- Designed an indoor localization technique using April Tags as fiducial markers

Research Assistant, Ahmedabad Robot Club, India Aug. 2008 – May 2013
Supervisor: *Dr. Ronak Shodhan*

- Fabricated a security system to isolate the residents of the house to avoid any fatality (Patent Applied)
- Designed innovative robotics and automation solutions for social causes in India

TEACHING EXPERIENCE

Course Instructor, Worcester Polytechnic Institute, USA Jan. 2020 – May 2020
Swarm Intelligence, Graduate Course

Teaching Assistant & Guest Lecturer, Worcester Polytechnic Institute, USA Jan. 2015 – May 2019
5 Graduate Classes and 11 Undergraduate Classes, Nominated as the best TA at WPI

Course Assistant, University of Southern California, USA Jan. 2014 – May 2014
Artificial Intelligence, Graduate Course

Lecturer and Mentor, Ahmedabad Robot Club, India Aug. 2008 – May 2013
100+ Students (9-35 year old)

PUBLICATIONS

5. Jayam Patel, Prajankya Sonar and Carlo Pinciroli. **On Multi-Human Multi-Robot Remote Interaction: A Study of Transparency, Inter-Human Communication and Information Loss in Remote Interaction.** *Published in the Springer Journal of Swarm Intelligence. 2022.*
4. Jayam Patel, Tyagaraja Ramaswamy, Zhi Li and Carlo Pinciroli. **Level of Transparency in Multi-Human Multi-Robot Interaction.** *In Review. Available on arXiv.*
3. Jayam Patel, Tyagaraja Ramaswamy, Zhi Li and Carlo Pinciroli. **Inter-Human Communication in Multi-Human Multi-Robot Interaction.** *In Review. Available on arXiv.*
2. Jayam Patel and Carlo Pinciroli. **Improving Human Performance Using Mixed Granularity of Control in Multi-Human Multi-Robot Interaction.** *In IEEE International Conference on Robot and Human Interactive Communication (RO-MAN). 2020.*
1. Jayam Patel, Yicong Xu and Carlo Pinciroli. **Mixed-Granularity Human-Swarm Interaction.** *In IEEE/RSJ International Conference on Robotics and Automation (ICRA). 2019.*

CERTIFICATIONS

Deep Learning Specialization, *deeplearning.ai, Coursera Specialization* Jul. 2020
Introduction to Psychology, *University of Toronto, Coursera Certification* Jul. 2020
Machine Learning, *Stanford University, Coursera Certification* Jun. 2020

KEY PROJECTS

Improving Performance in Multi-Human Multi-Robot Interaction, *NEST Lab, WPI* Jan. 2016 – May 2021

- Designed an augmented reality-based and a cloud-based interface for multi-human multi-robot interaction
- Evaluated various research aspects with 8 user studies involving 122 participants

Gesture-Based Navigation & Localization of a Smart Wheelchair, *RIVeR Lab, WPI* Aug. 2015 – May 2016

- Built EMG interface to control wheelchair navigation
- Designed indoor localization of wheelchair using an off-the-shelf camera and APRIL Tags

ROS-GAZEBO Modeling of Neurosurgery Robot, *AIM Lab, WPI* Jan. 2015 – May 2015

- Created ROS-Gazebo bridge for simulating a no-go region for collision avoidance
- Designed an algorithm to plan a collision free trajectory of the MRI robot

AWARDS

Conference Travel Award, International Conference on Robotics and Automation (ICRA) 2019
Conference Travel Award, WPI 2019

EXTRACURRICULAR ACTIVITY

Speaker and Mentor, Robotics Outreach and Awareness, India Jan. 2009 – Present
Head of Technical Events, IEEE Robotics and Automation Society (RAS), WPI, USA Aug. 2019 – Mar. 2021
Member, Rho Beta Epsilon, Robotics Honor Society, WPI, USA Mar. 2019 – May 2021
President, South Asian Student Association (SASA), WPI, USA Aug. 2015 – Jul. 2016
College Head, YUVA College Unstoppable, an NGO, India Aug. 2006 – May 2012
Volunteer and Teacher, Prayas, an NGO, India Aug. 2008 – May 2012