

# Jeel Chatrola

## MS Robotics Engineering, WPI

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### EDUCATION

- **Worcester Polytechnic Institute** Worcester, MA  
*Master of Science - Robotics Engineering*  
*Courses: Motion Planning, Machine Learning, Robot Control*  
Aug 2023 - Present
- **Pandit Deendayal Energy University** Gandhinagar, India  
*Bachelor of Technology - Electrical Engineering | GPA: 9.19/10.0*  
*Courses: Micro-controller & Microprocessors, Power Electronics, Analog and Digital Electronics, Network Theory, Control Theory, Digital Signal Processing*  
Aug 2018 - May 2022

### WORK EXPERIENCE

- **Robert Bosch Centre for Cyber-Physical Systems, Indian Institute of Science** Bangalore, India  
*Research Assistant (Full-time)*  
Jan 2022 - June 2023
  - **Research Title - Autonomous Exploration with Safety Guarantees** 🔗: Developing a general autonomous exploration framework for the exploration using Symbolic Motion Planner that provides safety guarantees.
  - **Project Title - Research Grade Modular Mobile Robot**: Developing a four-wheel differential drive mobile robot. The Final robot will be fully autonomous with a set of formally verified controllers.
  - **Project Title - Hardware Implementation of Multi-robot systems with a Motion Capture system** 🔗: Implemented a system using ROS where we integrated various types of robot/s with the motion capture system to perform experiments on control and planning algorithms.
- **Robert Bosch Centre for Cyber-Physical Systems, Indian Institute of Science** Bangalore, India  
*Teaching Assistant (Full-time)*  
Jan 2023 - May 2023
  - **Formal Analysis and Control of Autonomous Systems - Dr. Pushpak Jagtap ( [pushpak@iisc.ac.in](mailto:pushpak@iisc.ac.in) )**: Designing and Grading Assignments for Laboratory experiments to implement various formal control techniques in simulation and real robots. Also, managed time schedules and coordinated class/office hours for doubt clearing.

### PUBLICATIONS

- **Research Paper: Funnel-based Reachability Control of Unknown Nonlinear System using Gaussian Process** 🔗: Published in IEEE Indian Control Conference (ICC-2022). Tech: MATLAB, Python
- **Research Paper: Autonomous Exploration using Ground Robots with Safety Guarantees** 🔗: Accepted in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS-2023). Tech: C++, Python, ROS
- **Research Paper: Controller Synthesis for Local and Global Specifications in Multi-Agent Systems** 🔗: Accepted in IEEE Conference on Decision and Control (CDC-2023). Tech: MATLAB, Python

### PROJECTS

- **Control-Barrier for Safe operation of multi-robot systems. (03/2022 - 05/2021)** 🔗: Implemented control barrier function to provide safety while testing different types of swarm algorithm for robots using the motion capture feedback. (Tech Stack: ROS, Python, C++)
- **OCMR - Open Source Cost-Effective Mobile Robot Platform (06/2021 - 09/2021)** 🔗: Developed an open-source platform (\$150) to help fellow students/hobbyists to build a cost-effective mobile robot from scratch. (Tech Stack: ROS, Arduino, Python)
- **Control of a UR5 Robotic Arm for Sorting Packages (12/2020 - 01/2021)** 🔗: This project was built as a part of the e-Yantra Robotics Competition where we sorted the packages based on their color using computer vision and Moveit framework. (Tech Stack: ROS, Python, OpenCV)

### SKILLS SUMMARY

- **Programming Languages:** Python, C, C++, MATLAB
- **Frameworks:** Scikit, ROS, PyTorch, Numpy, OpenCV
- **Tools:** Bash, GIT, LATEX
- **Platforms:** Linux, Windows, Embedded Systems ( Arduino, Raspberry Pi, Nvidia Jetson )
- **Soft Skills:** Initiative-Driven, Strong Planning & Organization Skills, Event Management, Collaborative
- **Languages:** English, Hindi, Gujarati

### CERTIFICATIONS

- Introduction to Aerial Robotics - Coursera 🔗
- Introduction to Mobile Robotics - University of Freiburg 🔗
- Machine Learning - Coursera 🔗
- Foundations to Computer Systems Design - NPTEL 🔗