PRANAV GOYAL

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EDUCATION

University of Michigan, Ann Arbor *Aug 2024 – Present; expected Aug 2029*
Ph.D. Candidate in Robotics; Advisor: Dr. Christoforos Mavrogiannis *GPA: 4.12/4.00*

BITS Pilani, K. K. Birla Goa Campus *Aug 2019 – Mar 2023*
B.E. in Electronics and Instrumentation Engineering *GPA: 8.58/10*

SELECTED PUBLICATIONS

- **Intent Representation and Human Distraction Modulate the Effects of Legible Robot Motion in Hallway Navigation.** **Pranav Goyal**, *A. Stratton, C. Mavrogiannis. Accepted to THRI, 2026.*
- **How Human Motion Prediction Quality Shapes Social Robot Navigation Performance in Constrained Spaces.** *A. Stratton, P. T. Singamaneni,* **Pranav Goyal**, *et al. HRI, 2026.*
- **Bi3: A Biplatform, Bicultural, Biperson Dataset for Social Robot Navigation.** *A. Stratton, P. T. Singamaneni,* **Pranav Goyal**, *et al. ICRA, 2026.*
- **SocRATES: Language-Driven Scenario Generation for Evaluating Social Navigation Algorithms.** *S. R. Marpally,* **Pranav Goyal**, *H. Soh. RA-L, 2026.*
- **LTLDoG: Satisfying Temporally-Extended Symbolic Constraints for Safe Diffusion-Based Planning.** *Z. Feng, H. Luan,* **Pranav Goyal**, *H. Soh. RA-L, 2024.*
- **Alpaca: An Interactive Platform for Social Robot Navigation. Pranav Goyal** *et al. HRI 2027, in review.*

RESEARCH EXPERIENCE

Fluent Robotics Lab, University of Michigan Ann Arbor, USA
Graduate Research Assistant *Aug 2024 – Present*

- Developed MPPI-based intent-expression planners in PyTorch and deployed them on Stretch 2; evaluated intent representation and distraction in two controlled studies ($N = 45$ each; first-author THRI paper).
- Evaluated how human motion prediction quality affects robot navigation and human experience (HRI 2026); contributing to Bi3 and ACME datasets (ICRA 2026; ACME under review at IJRR).
- Developing Alpaca, a ROS 2 platform integrating pedestrian tracking, prediction, navigation, and conversational interaction (under review at HRI 2027).

CLeAR Lab, National University of Singapore Singapore
Research Assistant; Advisor: Dr. Harold Soh *Aug 2023 – Aug 2024*

- Deployed LTLDoG, a diffusion-based planner with temporal-logic constraints, for Unitree Go2 navigation experiments in human environments (RA-L 2024).
- Developed LLM-driven scenario generation in ROS 2/Gazebo to benchmark social-navigation planners and identify failure cases (SocRATES, RA-L 2026; earlier RSS 2024 workshop paper).

Biorobotics Lab, Carnegie Mellon University Pittsburgh, USA
Research Intern / Bachelor's Thesis; Advisor: Dr. Howie Choset *Jun 2022 – Jan 2023*

- Built a HEBI-based robot prototype and implemented convex MPC and kinematic control for legged–wheeled locomotion (DARPA VeRT).
- Developed a Hierarchical Localization / COLMAP pipeline to align multi-day Surfside 3D reconstructions for semi-automated void detection (SSRR 2022; IROS 2023).

TECHNICAL SKILLS

Programming & Tools: Python, C/C++, MATLAB, Bash, R; PyTorch, ROS 1/2, Gazebo, OpenCV, Open3D
Methods: MPPI, convex MPC, diffusion planning, temporal logic, reinforcement learning, human motion prediction, 3D reconstruction and point-cloud registration
Hardware: Stretch 2, Unitree Go2, Universal Robots, WidowX, AgileX Ranger Mini 3.0, OptiTrack

AWARDS & SERVICE

Awards: Robotics PhD Departmental Fellowship; Rackham Travel Grant; Runner-up Best Paper, RSS 2024 Workshop on Unsolved Problems in Social Robot Navigation
Reviewer: THRI, RA-L, ICRA, IROS, HRI, Autonomous Robots, RO-MAN
Teaching: Graduate Student Instructor, ROB 204: Introduction to Human-Robot Systems, Michigan (Fall 2026)