Buddy-Bot
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Motivations
The training of service animals can be very time consuming, expensive, and different per animal, where a robotic solution may be better.

Objective
Design and build a scalable and portable platform for service robotics.
Integrate control interfaces to allow disabled people to interact with the robot.

Goals
Create a simulation of our robot to mimic physical counterpart
Implement S.L.A.M and test by mapping virtual environment
Navigate through simulated environment while avoiding previously unseen obstacles
Create a ROS interface to control the physical robot from simulation
Design Human interaction system to allow for control of robot through hand gestures and voice commands

Motivations and Objectives
Remote Control
Control of robot remotely with movement commands from external computer
Human Interaction
Control of robot through voice and hand gesture commands
Mapping and Navigation
Creates a map of its environment using both its lidar and depth camera
Autonomously navigates to a goal while avoiding obstacles

Research Challenges
Difficulty in creating and tuning the hardware interface from ROS to the physical robot.
Integrating multiple features such as object detection, voice control, and hand gestures across multiple sensors.

Methodology
Create a simulation of our robot to mimic physical counterpart
Implement S.L.A.M and test by mapping virtual environment
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Results

Acknowledgement
We would like to thank our advisor, Professor Bajwa, for his constant feedback during iterations of our project. We would also like to thank Rutgers IEEE club for providing us with an old competition robot that we were able to repurpose and various sensors/tools throughout the process.

References

Images:
- Buddy-Bot
- RPLidar A1
- Intel Realsense camera D435
- Nvidia Jetson TX2
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