EE/CE 468 : Mobile Robotics

Project Functional Architecture

Optimizing Cleaning Paths for Robots in Domestic Settings

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1 Introduction

Cleaning paths for robots at homes are usually obstructed by furniture present which leads to inefficient work. Mobile robots for cleaning at home such as the “Roomba” by iRobot, has been described as drunk due to them getting stuck under furniture and stop working after hitting obstacles in their path. The project aims to research the cleaning and obstacle finding algorithms of these robots in domestic settings and study on how these can be implemented in a manner where the path planning of the robot is much more efficient for cleaning purposes.

2 Testing Plan

The testing plan for the project is as follows:

1. **Testing the robot in a simulated environment:** The robot will be tested in a simulated environment to test the cleaning and obstacle finding algorithms. The simulated environment will be a 2D grid with obstacles and furniture placed in it. The robot will be tested for cleaning the environment and finding the obstacles in the environment. The robot will be tested for different cleaning algorithms and different obstacle finding algorithms. The robot will be tested for different types of obstacles and furniture in the environment. The robot will be tested for different types of cleaning algorithms and obstacle finding algorithms. The robot will be tested for different types of obstacles and furniture in the environment. The robot will be tested for different types of cleaning algorithms and obstacle finding algorithms. The robot will be tested for different types of obstacles and furniture in the environment. The robot will be tested for different types of cleaning algorithms and obstacle finding algorithms. The robot will be tested for different types of obstacles and furniture in the environment. The robot will be tested for different types of cleaning algorithms and obstacle finding algorithms. The robot will be tested for different types of obstacles and furniture in the environment. The robot will be tested for different types of cleaning algorithms and obstacle finding algorithms. The robot will be tested for different types of obstacles and furniture in the environment. The robot will be tested for different types of cleaning algorithms and obstacle finding algorithms. The robot will be tested for different types of obstacles and furniture in the environment. The robot will be tested for different types of cleaning algorithms and obstacle finding algorithms. The robot will be tested for different types of obstacles