Carnegie Mellon University

Robotics Capstone Project

Requirement Specifications and Analysis

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1 Executive Summary

1.1 Project Overview

- Multi-agent system with small robots - Robot collaboratively work to recreate / draw an image on a variable scale -

1.2 Document Outline

Input in quick outline of what we are talking about **Write summary of flow. Table of contents in words**

2 Project Description

2.1 Product Goal

2.2 Motivation

automate a dull task. Really dull. Could be dirty, in the sun.

It takes a lot of time, can do overnight for like airports so dont have to worry about paying people. This improves infrastructure quality

Also makes sports things easier to maintain.

Fun thing with children for chalk drawings. Toy. Get the robot to bring your picture to life.

2.3 Product Scope

We want to talk about whats in scope and what might be out of scope

its multi-agent. could have tons of robots. Right now we have 2 as a test bed.

while many use cases involve large scale applications like stadiums we are going to do smaller things like on a poster. Expanding to this would involve making same robots but more durable (ie function outside)

explore uses of different types of writing implements/surfaces: sharpies vs chalk vs spray paint vs markers. Wont explore all but explore some. Might use liquid chalk

2.4 Assumptions

Some introduction to this blah blah

A1: Working on flat, homogenous surface (ie no muddy ground - thats out of scope - reference that section)

A2: Manually loaded writing implement.

A3: Using writing utensil that writes like a pencil, ie not spray something

A4: Clear, perfect communication (no noise). Robots can communicate quickly and fairly perfectly in a timely manner

3 Requirements

Some details

3.1 Functional Requirements

FR1: Robots Localize Globally and Locally Priority Num

Fill in more details

3.2 Non-Functional Requirements

NFR1: Short Description Priority 2

Fill in more details

4 Use Cases

Include pictures in this section

4.1 Chalk Drawing

Drawing large scale items on blacktop/asphalt. People draw for message around campus, proposal, community annoucements

4.2 Parking Lot Lines

Redraw parking lot lines. Can be expanded for highway drawing or street markings. Add pavement lines specifications and details

also lines at airports for runways (get specs)

4.3 Sport Lines

Draw lines for football, american football, etc goal lines and posts.