Remote Rover Training System
Customer Requirements

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This document outlines customer requirements for the Remote Rover Training System. This system is intended to provide scientists and engineers with valuable experience developing and using robust remote robotics platforms and operating systems in a low-cost, low-risk enviroment.

1 Introduction

The Remote Rover Training System (hereon referred to as "the System") is a mechanically simple mobile robot intended to provide a training platform for aspiring engineers and scientists who may use such robotics in the course of their duties. The System is intended to provide a gentile and easy introduction to developing real-time operating systems on a remote mobile robot which is easily replaceable and robust enough to avoid being damaged by faulty programming.

2 Physical Requirements

These requirements outline restrictions on the System regarding size, weight, accessibility, and mobility.

2.1 The System shall weigh no more than can be carried by a single person.

2.2 The System shall be capable of fitting in a person's arms comfortably.

2.3 The system shall expose all components and circuitry to the user with the removal of at most one access panel.

2.4 The system shall be capable of easily traversing a room with a carpet of no more than 1/2 inch thickness.

3 Electrical Requirements

These requirements outline restrictions on the System regarding operational duration, range, and sensor capabilities.

3.1 Power and Operational Requirements

3.1.1 The System shall be battery powered.

3.1.2 The System shall utilize a battery which is rechargeable.

3.1.3 The System shall have enough stored energy to operate without activating its motors for at least an hour without recharging.

3.1.4 The System shall have enough stored energy to traverse a room without recharging.

3.2 Transmission and Communication Requirements

3.2.1 The System shall be capable of receiving commands remotely.

3.2.2 The System shall be capable of sending sensor data remotely.

3.2.3 The System shall be capable of receiving software updates remotely.

3.3 Sensor Requirements

3.3.1 The System shall be capable of determining the distance travelled from its origin.

3.3.2 The System shall be capable of determining the remaining battery power available.

3.3.3 The System shall be capable of determining the power dissipated through the drive motors.

4 Mechanical Requirements

These requirements outline restrictions on mechanical operations the System shall be capable of performing.

4.1 Motivation Requirements

4.1.1 The System shall be capable of travelling forward and reverse.

4.1.2 The System shall be capable of rotating clockwise and counterclockwise without travelling forward or reverse.