Mars Cleanup Requirements

Kit 7

Introduction

We are asked to build a landing site cleanup rover for NASA’s Mars rover. Our rover will land and clear the landing zone from cans left by the local Martians. While alerting Martians of our operation. The longest this task will take us is 30 seconds. Our rover will then evacuate the area for the Mars rover to land.

Charter:

Our functions for the Rover are displayed below with a numbered list. These functions show what our rover will function and behave. Functions in the list will contain attributes and constraints for that function. Attributes are characteristics of a function. So a function of fly would have an attribute of distance or height. Attributes can have constraints that quantify the attribute. Finally preferences are functions that cannot be constrained and are listed after the functions.

Functions:

1. The bot will be:

Compact[1 cubic foot]

1. The system should be built using

Kit[LejosNXT]

1. The system should clear the cans from the zone

NumberOfCans[3]

Quickly[ <= 30 seconds]

1. The system should notify Martian:

When moving[Forward, backwards, moving cans]

Variety of tones[high, low, medium]

Moving Tones[(Forward,High), (Backwards, Low)(Moving Cans, Medium)

1. The system should evacuate the landing zone:

When cleared[3 cans removed]

Quickly[ can’t be greater than 30 seconds]

1. The system should keep track of cans moved

Cans moved[at most 3]

1. The system should push cans out of the landing zone:

Number of cans[3]

1. The system should keep track of distance the cans are moved.

Distance Moved[cm]

1. The system should display the distance each can is pushed:

Display[cm]

1. The system should display the length of time to remove cans

Display[milliseconds]