NXT Autonomous Retriever using Bluetooth

Aakash Dave adave@ncsu.edu

Aim

The aim of the project is to implement an autonomous vehicle which is used for retrieval of items. The bot takes input from the Bluetooth controller and goes to the given location to get the item.

URL: http://www4.ncsu.edu/~adave/csc714.html

Problem Statement

Autonomous bots are an important part of the industry. They are used in various fields like manufacturing and transportation. In this project the focus is on huge indoor spaces like warehouse and libraries where we can see a shift towards automation. The idea is to use bots to perform item retrieval from a given location. Also once in a while an operator might need to use the bot for purposes other than the programmed option.

Outline

1.The bot will follow a path/track to collect the items based on user input.

2.User will be able to pair the bot with a separate nxt.

3.Once paired it can take data input from the controller and implement various path maneuvers based on bot design.

4.The bot can be made to work in different modes based on user preference. In track mode it can automatically retrieve the object. If remote control mode is selected the user can manually take the robot to desired location.

5.One more option is to detect when a certain area needs to be serviced based on a set timer and the bot can follow certain tracks based on a algorithm.

Challenges

1.The algorithm needs to be defined to take into account autonomous and manual control.

2.Path following needs to be accurate so the robot can determine the exact points to stop and retrieve items.

3 .Bluetooth communication has some issues for NXT 2.0 and needs nxt's to be configured properly so as to detect each other.

4. Response time from Bluetooth is an issue as this makes it quite difficult to maintain accurate operation.

Milestones

1. Bluetooth communication work between the two NXT's
2. Algorithm design for autonomous control
3. Track and bot design for remote control
4. Implement track ,retrieve mode and implement a timer
5. Feature testing phase

References

http://lejos-osek.sourceforge.net/nxtgamepad.htm

http://lejos-osek.sourceforge.net/datalogging.htm

http://lejos-osek.sourceforge.net/nxt2nxt.htm