

Progress Report – CSC 714

NXT Autonomous Retriever

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Tasks Completed –

Select a bot design for navigating the track based on sensor capabilities

Implement the application code.

Implement a track based on bot capabilities and Bluetooth limitations on the NXT.

Tasks In Progress –

Testing of the system as per project scope. – 4/20

Finalize Track and Bot for final demo. – 4/25

Report and Presentation work. – 4/27

Problems faced

Application Coding

When combining line following and Bluetooth event based communication, there were issues in implementing logic for sending/receiving event based input and then moving back to sensor task based design. This was solved by creating an auto start task and a separate cyclic task which triggers the event if an input is received along with other logic.

There was also an issue of getting the motors to work when using Bluetooth, in this case only eCrobot API works and not the `nxt_motor` commands.

Bluetooth Input Location

In the current setup markers are kept beside the track to indicate stop locations. As the bot goes around the track it uses the light sensor to detect the markers. Input is given by tapping the touch sensor a given number of times indicating the marker number we want the bot to stop at.

Track Selection and implementation -

Right now the bot has been designed for a simplified track and tested on the circular line follower track with markers. It works as intended.

Open Problems

Stop Time Logic

Bot has to stop for a certain period and then go back to following the line. This has a possible fix where we delay the bot for a given amount of time or make it wait for an external input.

Track Complexity

The Grid Track problem is still pending as it is more complex to properly navigate using light sensors. Since this will most probably need help from android, it's being looked into. Hence Grid track will only be used if android interface works out.