

CS5244 Introduction to Cyber-Physical Systems

Project # 2 Android Remote Control of NXT Car, Due Dec. 24 (10:10 a.m.)

Introduction

There are lots of emerging applications belong with mobile devices nowadays, since mobile devices accompany with us most of the time and they gradually become the control panel in our daily lives. As the most popular mobile platform, Android can be a good step stone for student to develop mobile applications.

In this project, we need to implement a NXT control panel on Android phone. The control panel app should not only utilize accelerometer and gyroscope to detect tilt and movement, but also retrieve sensor measurements that can help users to decide their next step. Our NXT and Android phone is connected through Bluetooth as we used in the previous project. In brief, the goal of the app is to offer stable remote control either your NXT is visible or behind obstacles.

Implementation (7%)

- | | |
|--|---------|
| 1. Movement control | 0.5% |
| 2. Bluetooth connection between NXT and Android phone. | 0.5% |
| 3. Basic GUI of the control panel app . | 1.5% |
| 4. Utilize accelerometer to detect tilt and movement from Android app. | 2.0% |
| 5. Handling multiple sensor measurements with noise and error. You are free to any technique you know to achieve the best control performance, and your grade is fully up to it. | 2.5%~5% |

Report (3%)

Describe how you implement the NXT control app on Android and evaluate the performance of your system.

Reference

[1] leJOS Tutorial please see: <http://www.lejos.org/nxt/nxj/tutorial/>