Real Time System Department
Fog Computing of Self Balancing Robot

By

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1 Motivation

Improvment for the next generation industry is the key idea to implement this project.The traditional robots have dedicated controller and resources to meet the rela tme constraints.The main idea here is to be able to do complex funcitonality on fog node meeting the real time contraints, which can not be done via dedicated controller and resourses.Fog computing may provide local data processing along with real time communicatioon mechanism.

2 Project Flow

Here we are implemneting a self balancing robot running on esp32 and the main PID control loop to be implemented on the fog node while meeting the requirement of the robot to be balanced.
Flow of the project:

- To understand the communication protocol of the lego sensors
- Implement communication of lego sensors with Arduino
- Integrate the sensors togther to build self balaning bot
- Change from Arduino to esp32 for the wireless communication
- Structure the robot
- Get exact value of the PID
- Shift the PID function on node.

3 Literature Survey

Consider broomstick on the index finger, when trying to balance it we will have to move the finger in direction of the falling broomstick. Similarly the robot would fall either forward or backward which can be controlled by moving the robot either backward or forward. To make a balancing robot we need to control the center of gravity of the robot just at the pivot point.

3.1 Requirement for balancing the robot

- Direction the robot is falling
- Robot tilts

These information can be dedSelfBalancing Robotuced from the accelero-meter and gyroscope in a complimentary filter.

3.1.1 hello

hello

3.1.2 crazy

ccrayzzz