EN2533 – Robot Design and Competition

Homework 5

Details About Components and Mechanisms

Team RobotBlast

**Components**

1. **Sensors**
2. IR Sensor Array

The IR sensor array will be used to do the line following task in both the simulated and the physical task. It is used to identify the white line in the black surface clearly so the array will be placed under the chassis.

An IR sensor module typically has a variable resistor so the range which the sensor will do the sensing can be adjusted. The maximum distance it will sense is 20cm. But the height to the robot chassis is less than 20 cm, the IR sensor will work without any issue.

1. Ultrasonic Sensor

HC­SR04 Ultrasonic Sensor will be used in both simulated and physical task to detect any obstacles around the robot, detect the chess pieces in the simulated task, detect the walls in the physical task. Ultrasonic sensor is the better solution for wall following task since the sharp IR sensor has different sets of outputs for distances from 0 – 15cm and 15 cm above. For the proper function of the ultrasonic sensor, the distance from the wall and the robot should be at least 15 cm.

1. RGB Color Sensor

This sensor will be used to detect the colored lines in the colored line following task in both the simulation and the physical task.

1. Accelerometer

This will be used to get the velocity of the moving robot and to control the velocity of the robot. It is very important to control the speed since every other sensor has a response time and it should be properly matching with the speed of the robot.

1. **Wheels**
2. Physical Task
3. Simulation
4. **Batteries**

Lithium-ion 3.7 V rechargeable batteries will be used to powerup the robot in both simulated and the physical task.

1. **Actuators**
2. **Other**
3. H Bridge

**Mechanisms**