

Multiple Motion Control System of Robotic Car Based on IoT to Produce Cloud Service

ABSTRACT

The world of control is an exciting field that has exploded with new technologies where the Internet of Things (IoT) vision becomes reality. This paper proposes a multiple motion controlling mechanism of a robotic car using Raspberry Pi which works as master and Arduino UNO which works as slave. Each device is uniquely identifiable by the controlling software which is the core concept of IoT. Client manages the activities of the car from remote or distant places over the internet by voice commands and Universal Windows Application and also able to get data and feedback. The main contribution of this paper is that it leverages the efficiency of robot's motion controlling system because robotic car can receive direct commands at a time from multiple sources which make the maneuvering system more efficient. Both device and client do not need to be online at the same time. Commands and data are stored in cloud service which delivers them when the device is ready to receive. A GPS system is incorporated thus clients can trace the car. The system has ultrasonic distance sensor for avoiding obstacles coming in between its path. We present the architecture and design of the Raspberry Pi and Arduino communication software and illustrate how to control the car by means of commands and application.

EXISTING SYSTEM

In existing system, one has to ride the car on their own. A Robotic car (also known as a driverless car, self-driving car) and Unmanned Ground Vehicle is a vehicle that is capable of sensing its environment and navigating without human input. They all require a human at the wheel who must be ready to take control at any time. These cars use a variety of techniques to detect their surroundings, such as radar, laser light, GPS, odometry and computer vision. Advanced control systems interpret sensory information to identify appropriate navigation paths, as well as obstacles and relevant signage. These cars must have control systems that are capable of analyzing sensory data to distinguish between different cars on the road.

DRAWBACKS

- Security is less.
- It doesn't work safely in some weather conditions.

PROPOSED SYSTEM

This paper proposes a multiple motion controlling mechanism of a robotic car using Raspberry Pi which works as master and Arduino UNO which works as slave. Each device is uniquely identifiable by the controlling software which is the core concept of IoT. Client manages the activities of the car from remote or distant places over the internet by voice commands and Universal Windows Application and also able to get data and feedback. The main contribution of this paper is that it leverages the efficiency of robot's motion controlling system because robotic car can receive direct commands at a time from multiple sources which make the maneuvering system more efficient. Both device and client do not need to be online at the same time. Commands and data are stored in cloud service which delivers them when the device is ready to receive. A GPS system is incorporated thus clients can trace the car. The system has ultrasonic distance sensor for avoiding obstacles coming in between its path. We present the architecture and design of the Raspberry Pi and Arduino communication software and illustrate how to control the car by means of commands and application.

ADVANTAGES

- It helps to reduce the memory load.
- Performance is enhanced.

SYSTEM REQUIREMENTS

H/W System Configuration:-

- Processor - Pentium –IV
- RAM - 4 GB (min)
- Hard Disk - 20 GB
- Key Board - Standard Windows Keyboard

- Mouse - Two or Three Button Mouse
- Monitor - SVGA

S/W System Configuration:-

- Operating System : Windows 7 or 8 32 bit
- Application Server : Tomcat5.0/6.X
- Programming Language : Java
- Java Version : JDK 1.6 and above