

“Wireless cARdrONE Surveillance Robot”

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Abstract - A robot has been developed which can be used for multipurpose applications related to surveillance with a wireless motive. It is mainly implemented for monitoring various circumstances in the surrounding environment. We propose a cost effective four wheels surveillance robot using raspberry pi microcontroller which employ servomotor including DC Motor, RC receiver and transmitter, various types of different sensors etc. A high resolution video camera is attached with the robot for acquisition of images and video from the surrounding. By watching the situational images and videos, it is the user who can get the idea of environment. This system is very useful for monitoring in areas where there is no Internet connection and also the collapse of the communication system during any disaster. Our project “Wireless cARdrONE Surveillance Robot” describes the scopes and methods mentioned above.

Key Words: Raspberry pi, Camera interfacing, Sensors module, face detection, server etc

1. INTRODUCTION

Nowadays, robots are becoming a platform to develop or discover a machine to ease the work of human. A robot basically is an intelligent device designed to help humans in almost every relevant or irrelevant field. The robots have no fixed shape, neither are been specified for any particular field or for any particular work. They can be made or converted into any form depending upon the area of application. Most likely, nowadays robots are made with the help of additional technologies like instead of connection oriented; robots are being built with a total connection less motive i.e. wireless ones. Also with the help of surveillance motive, different situations, regions describing various

difficulties can be monitored easily. Hence to enhance these features in a better manner, we have implemented a wireless surveillance robot to monitor environmental situations in an efficient way.

2. LITERATURE SURVEY

This paper proposes a method for controlling a wireless robot for surveillance using an application built on Android platform. The Android application will open a web-page which has video screen for surveillance and buttons to control robot and camera. Android Smartphone and Raspberry pi board is connected to Wi-Fi. An Android Smartphone sends a wireless command which is received by Raspberry pi board and accordingly robot moves. The Video Streaming is done using MJPG streamer program that gets mjpeg data and sends it through a HTTP session. The Raspberry pi programming is done in python language. The experimental result shows that the video streamed up to 15 frames per second.[1]

This paper presents us a modern approach for surveillance of outdoor security. This robot has the ability to detect a human whether he/she is authorized or not using RFID tag and also detects metal bombs using metal detector sensor. Wireless camera mounted on the robot provides us continuous streaming of the defined outdoor area and a stepper motor is used for the rotation of the wireless camera in 360-degree direction. Surveillance is done even in complete darkness by using Infrared lighting. The heart of our paper is Aurdino Uno microcontroller, used to control the entire functioning of the robot. It analysis the signal from the RF receiver and displays the corresponding message. IR detector is used for the obstacle detection. Two DC motors

are interfaced at the receiving end of the microcontroller, which controls the movement of the robotic vehicle. GSM module is used to get the message about the human and metal detection. This robot replaces human being for security purpose.[2]

A robot has been developed which can be used for multipurpose application related to surveillance and security systems. From ground testing of this robot it has been found that it can be controlled from unlimited distance as the system is based on World Wide Web (www). This robot also has a teleoperation system based on radio frequency (RF) for signal processing. It has been found that this robot shows about 78% efficiency when a constant 512 kbps Wi-Fi internet connection is applied. Visual Basic software has been used to operate the robot. Four cameras are attached with the robot for acquisition of images from the surroundings. Vmcap software is used to show all these camera images at a time. The images from the four cameras and the control panel will be transmitted and displayed in the user's monitor. Virtual network computing (VNC) software has been employed for the purpose. By watching the situational images sent by the remote robot it is the user who can control the motion as well as can get the idea of the environment. A GPS (Global Positioning system) device is mounted over the robot to get the satellite image of the mobile robot trajectory of motion and a total track map. This paper describes the methods and scopes of the above-mentioned robot.[3]

3. Objective of System

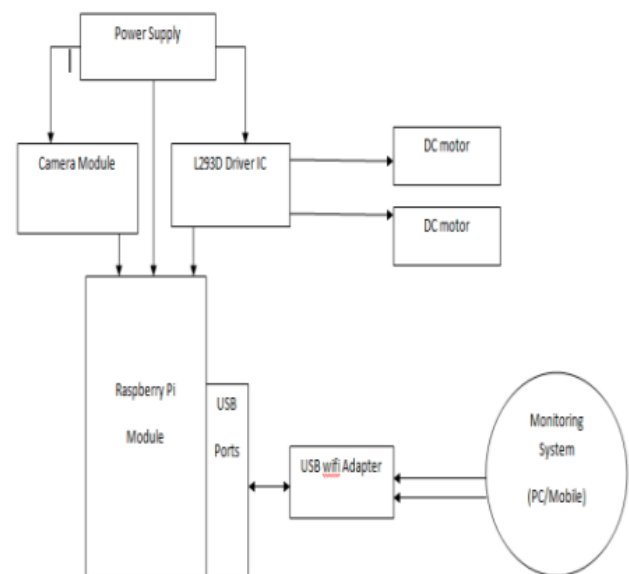
Often, the robots are used to do work that could be done by man. However, there are many reasons why robots are better than humans in performing certain tasks. Looking with the same, this project provides a wireless robot with a better surveillance means to address any difficult situations in the environment. Besides this, the obvious advantage of not having to risk any personnel, land and air, this robot can also look for details that are not visible to humans. It is possible to obtain distance information to specific area by providing the high resolution cameras and various sensors.

4. Motivation

The existing system includes a robot which works same like other traditional robots and have a lot of drawbacks, such that a robot works within specific means of technology, false

reliable ,etc.The existing system is very vulnerable to get in touch with area facing difficulties and no fulfilled mechanism is available. It is also very time consuming to address the issue and resolve the same.In our proposed piece of work, the robot fulfills the issues given above. It is very useful for monitoring in areas where there is no internet connection and also the collapse of the communication system during any disaster.

5. System Architecture



It consist of the basic model of the system connections and the inter-dependencies of each block on each other. Power supply is given to IC driver L293D and this supply is further given to two dc motors. Camera module and Raspberry Pi is mounted on robotic car for surveillance. The assembled model of the robotic car connected with camera, battery, motor driver L2938N, Power supply and all other components. This car is controlled by the commands given over remote/phone/desktop and the camera. It displays live video captured by the movement of robotic car which is controlled via phone/Desktop/remote. The robotic car has given the controls on the phone/desktop/remote the command such as forward, backward, right, left, fly, etc. for the motion of car respectively.

importance by using robots instead of humans with the help of additional features.

8. REFERENCES

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