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Design and Implementation of Spy Robot

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ABSTRACT: The World Is Full Of Surveillance, Which Was monitored by enemy countries. Especially, the border region of any country was controlled and monitored by the own country for their safety purpose, for that many technology was usedtomonitorthe region.Earlier,the surveillance was done by human, which causes many deaths by enemy country. To overcome the problem, the technology was introduced for surveillance with the help of robot. But now, the technology was upgraded, which made us to make a new robot for surveillance, bomb detector with automated gun. In this project, this was controlled using Arduino with Wi-Fi module. The camera was fixed and captures the video and monitored through it. The robot can move ups and downs of any place for surveillance with the help of motors. This was one of the multipurpose robots for militaryuse

KEYWORDS: Surveillance, Security, Monitoring, Arduino, Wi-Fi

I. INTRODUCTION

The advent of new high-speed technology and the growing computer Capacity provided realistic opportunity for new robot controls and realizationof new methods of control theory. This technical improvement together with the need for high performancerobotscreatedfaster,moreaccurateand more intelligent robots using new robots control devices, new drivers and advanced control algorithms.

This project describes a new economical solution of robot control systems .In general; the robots are controlled through wired network. The programming of the robot takes time if there is anychange in the project the reprogramming has to be done. Thus they are not user friendly and worked along with the user preferences. To make a robot user-friendly and to get the multimedia tone in the control of the robot, they are designed to make user commanded work. The modern technology has to be implemented to do this.

For implementing the modern technology it should be known by all the users to make use of it. To reach and to full-fill all these needs we are using android mobile as a multimedia, user friendlydevice to control the robot. This idea is the motivation for thisprojectandthemainthemeoftheproject.Inthis modern environment everybody uses smart phones whichareapartoftheirday-to-daylife.Theyuseall their daily uses like newspaper reading, daily updates, social networking, and all the apps like home automation control, vehicle security, human body anatomy, health maintenance, etc has been designed in the form of applications which can be easily installed in their hand held smart phones.This project approached a robotic movement control trough the smartphones.

II. MOTIVATION

It should be noted whenever customers want to buy any product through online from any e-commerce website he/she does visit the many e-commerce websites for getting the desire product. Like this customer surf lots of time in visiting of e-commerce websitesforgettingthedesireproduct.Thecustomer not only surfs lots of time in visitingof e-commerce sites, and quality of products, but alsohe/she suffers from limited option to choose the product.Theproposedarchitecture,bymakinguseof location-based service, offers a solution to those problems. That is, for customers there is no need to visits many e-commerce websites for buying the desire the product. A user can buy desired product withoutvisitingmanye-commercewebsiteaswellas without wasting of time in visiting of e- commerce website. Location-Based Smart Shopping using Android provides a stage to the customer where the user can get information of a particular product available in stores nearby. Moreover, a user is also provided navigation facility which will direct him to the shop he wants to buy the product fromIt should be notedwhenevercustomers want to buy any product through online from any e-commerce website he/she does visit the many e-commerce websites for getting the desire product. Like this customer surf lots of time in visiting of e-commerce websites for getting the desire product.

The customer not only surfs lots of time in visiting of e-commerce sites, and quality of products, but also he/she suffers from limited option to choose the product. The proposed architecture, by making use of location-based service, offers a solution to those problems. That is, for customers there is no need to visits many e-commerce websites for buying the desire the product. A user can buy desired product without visiting many e-commerce websiteaswellaswithoutwastingoftimeinvisiting of e-commerce website. Location- Based Smart Shopping using Android provides a stage to the customer where the user can get information of a particular product available in stores nearby. Moreover, a user is also provided navigation facility whichwilldirecthimtotheshophewantstobuythe productfrom.

III. ADVANTAGES OVER CURRENT SYSTEMS

In various areas there is a need of constant surveillance. The current surveillance system includes monitoring by using CCTV cameras and other monitoring system. Mostly these systems are stationary and they can cover a limited area. These systems are mostly control manually or through a computer. They cannot be used to cover a larger area as well as they cannot be controlled using any mobiledevice.Inshortwecansaythatthesesystems arenâTMt dynamic enough much which gives the need for the development of a surveillance system which is more dynamic and can be controlled remotely. This project is aimed at developing a surveillance system which can be controlled remotely by using an Android App. It includes a robot with a Wireless Camera attach to it. This robot captures the high resolution video feed and transmits it to the connected Android device which is used to control the robot In various areas there is a need of constant surveillance. The current surveillance system includes monitoring by using CCTV cameras and other monitoring system. Mostly these systems are stationary and they can cover a limited area. These systems are mostly control manually or through a computer. They cannot be used to cover a larger area as well as they cannot be controlledusing any mobile device. In short we can say that these systems arenâTMt dynamic enough much which gives the need for the development of a surveillance system which is more dynamic and can becontrolled remotely. This project is aimed at developing a surveillancesystemwhichcanbecontrolledremotely by using an Android App. It includes a robot with a Wireless Camera attach to it. This robot captures the high resolution video feed and transmits it to the connected Android device which is used to control the robot.

IV. BLOCK DIAGRAM

The design part of the attendance monitoring system is divided into two sections which consist of the hardware and the software part. Before the software part can be developed, the hardware part is first completed to provide a platform for the software to work.Inthehardwarepart,theprocessoftheAtmega 328p of Arduino isprovidedbelow

This system consists of Hardware parts Include :-
1. ArduinoUno R3
2. Bluetooth Module
3. Battery 12 2Amp
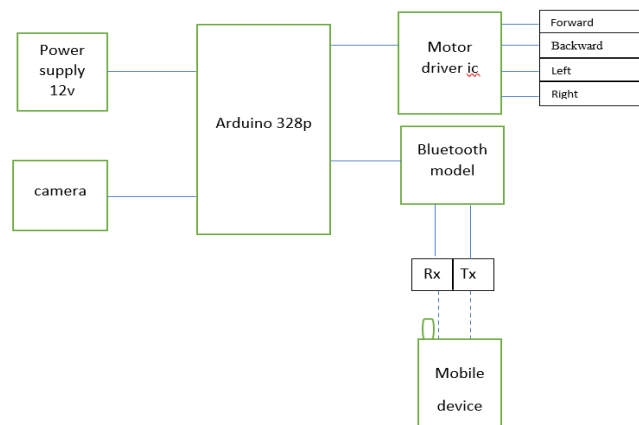4. Motor 60rpm
5. Motor driver
6. toggle switch
7. Wi-Fi Camera

Figure 1 Block Diagram

Arduino Uno R3

The Arduino Uno is an open-source microcontrollerboardbasedonthe Microchipatmega328p microcontroller and developed by Arduino.cc The board is equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits. The board has 14 digital I/O pins (six capable of PWM output), 6 analog I/O pins, and is programmable with the Arduino IDE (Integrated Development Environment), viaatype B USB cable.It can bepowered bytheUSB cable or by an external 9-volt battery,thoughit acceptsvoltagesbetween7and20volts.Itissimilar totheArduinoNanoand Leonardo. The hardware

Figure 2Arduino Uno R3

referencedesignisdistributed under a CreativeCommonsAttribution Share-Alike2.5licenseandisavailableonthe Arduino website. Layout and production filesforsome versions of the hardware are also available.

Bluetooth Module

Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength UHF radio waves in the ISM band from 2.4 to2.485 GHz) from fixed and mobile devices, and building personal area networks (PANs).InventedbytelecomvendorEricsson in 1994, it was originally conceived as a wireless alternative toRS-232 data cables. It can connect several devices, overcoming problems of synchronization.Bluetoothismanagedbythe Bluetooth Special Interest Group (SIG), which has more than 25,000 member companiesintheareasoftelecommunication, computing, networking, and consumer electronics.The IEEE standardized Bluetooth asIEEE802.15.1,butnolongermaintainsthe standard. The Bluetooth SIG oversees development of the specification, manages the qualification program, and protects the trademarks.A manufacturer must make a device meet Bluetooth SIG standards to market it as a Bluetooth device. A network ofpatentsapply to the technology, which are licensed to individual qualifying devices.
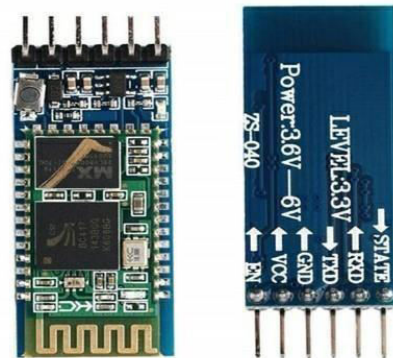

Figure 3 Bluetooth Module

L293D Motor Driver.

L293d ICis known as a motor driver. It is a low voltage operating device like other ICs. The other ICs could have the same functions like L293d but they cannot provide the high voltage to the motor. L293d provides the continuous bidirectional Direct Current to the Motor. The Polarity of current can change at any time without affecting the whole IC or any other device in the circuit. L293d has an internal H-bridge installed for two motors.H-Bridge is an electrical circuit that enables the load in a bidirectional way. L293d bridge is controlled by external low voltage signals. It may be small in size, but its power output capacity is higher than our expectation. It could control any DC motor speed and direction with a voltage range of 4.5 – 36 Volts. Its diodes also save the controlling device and IC from back EMF. To control the max 600mA amount of current an internal "Darlington transistor sink" installed in it, which could be used to

Figure 4 Motor driver

control a large amount of current by providing a small amount of current. It has also internal "pseudo-Darlington source" which amplifies the input signal to control the high voltage DC motor without any interception.
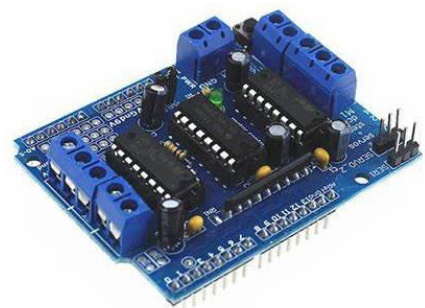
V. CIRCUIT DIAGRAM

The diagram of this proposed system is shown in Fig.5. In this system the microcontroller is the heart. It is controlled from outside device i.e., Android phone which communicates with microcontroller via Bluetooth personal network. An Android app is used to control it. Here DC gear motor is used to move the system back and forth and also towards move any direction.Here, an Android smart phone acts as a remote controller device for controlling the movement of the robot. An Android application is used for this purpose. The application supports only the 2.2 and above versions of Android Operating Systems. The Bluetooth module acts as an interface between Smartphone and 52 Smartphone Controlled Spy Robot with Video Transmission and Object Collector microcontroller. HC-05 Bluetooth module is used for this system. In this systems master is the smartphone and slave is the Bluetooth module.
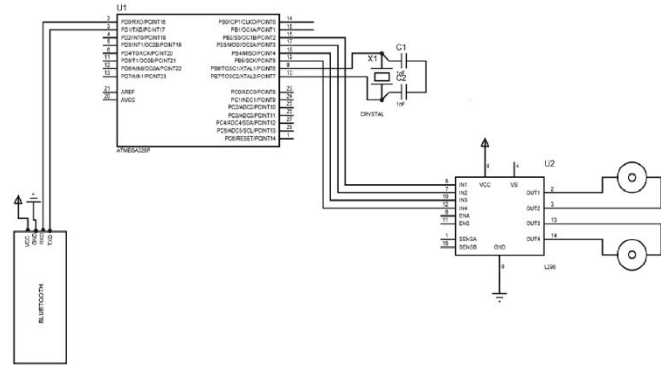
Bluetooth module fetches the commands given by the smartphone to the microcontroller. The microcontroller acts as the brain of the robot. The robots movement is decided by the microcontroller. In this system contains microcontroller named Arduino Uno. The microcontroller will be programmed with the help of the Embedded C programming. Arduino has its own programming environment through which the microcontroller can be programmed. For travelling purpose this system uses DC motor. It generates high amount of power and torque. A motor driver is used to control the DC motor which is connected to the microcontroller and the Bluetooth module is connected to the same. In this proposed system, a rechargeable battery is used to supply power to the electronic components of the system.

VI. RESULT

The implemented system is shown in Fig.6. In this system instructions are given to the microcontroller with the help of a smartphone through Bluetooth interfacing. Within 100 meters the instructions from the smartphone reach to the microcontroller very accurately. This system can move towards any direction properly. The wireless camera to transmitvideo has worked as the instruction given to it. The video transmission and all the sensors in this system are performing accurately. The transmitting signal's quality is good.We have measured the current consumption as well the battery backup. Here, the gear motors consume around 300mAh currents individually. Therefore, itconsumes around 600mAh currents. The microcontroller, Bluetooth module and other circuits consumes around 300mAh currents altogether. Considering some losses around 2600mAh currents is been consumed by the system. Here, we have installed batteries with the current rating of 3000mAh and 5 volts. Therefore, it can run about 1 hour or slightly more depending on the use with one charge.

Figure 6 Result

VII. CONCLUSION AND FUTURE SCOPE

ConclusionWe have successfully implemented the working of the wireless video surveillance robot controlled using android mobile device. The robot is successfully controlled using the android application through the wireless Bluetooth technology. Even the real time video feel is successfully achieved using the Wi-Fi technology on our designed android application.

Future Scope Surveillance is needed in almost every field. It could be a great solution to various problems or situation where wireless Surveillance is needed our project has tremendous scope as it uses the latest technology in the market. Our application uses the android OS which is currently the most used OS and also has a great future scope. The Surveillance robot can be controlled remotely using the android application; this gives it a huge scope for future application.

1.military operation

2.rescue operation

3.coal mines

4.security for shops .

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