Android Operated Spy Bot for Defence

Andhraya A[1] Guru Satti[2] Hariprasad[3] Neminath B[4] Amaresh Gunge[5]
[1,2,3,4]B.E. Student [5]Assistant Professor
[1,2,3,4,5]Department of Mechanical Engineering
[1,2,3,4,5]Nagarjuna College of Engineering and Technology, Bangalore, Karnataka, India

Abstract— Android, an operating system developed by Google for Smartphone's, tablets and such type of touch screen phones. Android app is a software running on Android platform. Typically an app is designed for specific purpose on Android platform such as smart phones and tablets. In this work a designing and implementing process of an Android based spy robot is described. An Android based application, Wi-Fi is used to control in this spy robot. This robot can be controlled with the help an app of Android phones. Arduino based microcontroller is used for instruction processing and giving proper instructions. Wi-Fi technology is used to interface between Arduino and Android. This robot can move to any place and perform smartly within WI-FI network range.

Keywords: Spy Robot, WI-Fi, Wireless camera, Micro controller

I. INTRODUCTION

A Robot is a virtual artificial agent. In practice, it is usually an electro-mechanical machine which is guided by computer, mobile or electronic programming device, and is thus able to do tasks as commanded. It needs an interfacing device such as Bluetooth, WI-Fi, ZigBee etc. for external controlling. In this work our concern is to build a spy robot i.e. such type of robot that can remain hidden and do the work without notifying any human being. This robot can work automatically or can be controlled by Smartphone's over Wi-Fi, a kind of wireless personal network which can be used to interface between microcontroller and Smartphone. In Smartphone an Android app is used to send data to the microcontroller that works as given instructions burned to it. Remote controlled spy robots are also available that use RF signal and works properly. Our project incorporates as a spy robot having an obstacle detector and other advanced features integrated in the same. And it also comprises of few advancements wherein the latest android technology can be utilized. The main technology used here for serial communication with the robot is the Wi-Fi technology. Wi-Fi technology can be used to share data between two devices considering the range between two devices. The Wi-Fi module ESP-8266 will be connected with the robot and the commands to the robot will be given through the android application

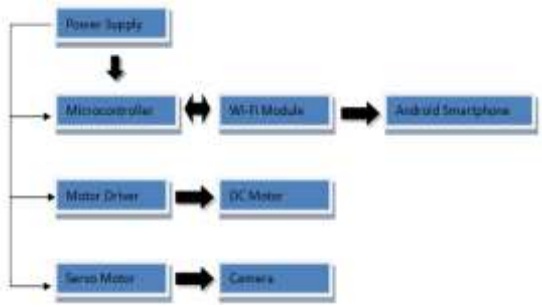

Fig. 1: Block Diagram of Proposed System

II. LITERATURE SURVEY

Balakrishnan M [1] et al. This paper presents the development and characterization of a surveillance robot with wireless controlling and wireless charging system. The proposed system composed of surveillance robot, wireless charge transmitter and wireless control station.

Rahul Kumar [2] et al. This paper deals with the design and control of automated vehicle type robot which can move in desired direction and captures pictures and videos of required location. An android application has developed using MIT App inventor and a Bluetooth communication is made with robot which interfaces with microcontroller to control its speed and direction.

Chanda P [3] et al. This paper deals with the design and implementation of a wireless gesture-controlled Robot using Arduino ATMEGA32 processor and an Android operated application to control the gestures via Bluetooth with minimal and cheap hardware requirements.

Sarmad Hameed [4] et al In this paper this thought is acknowledged at our fingertips. Robots are assuming a critical job in the military application. The vast majority of the work in the military is unsafe for person. In a war field or safeguard task a warrior needs to take his own specific manner to achieve the goal.

Diksha Shakya [5] et al this paper deals with the aim of the satisfying and meeting the changing needs of human from manufacturing unit to the household unit robotics and automation has been a distinct key player throughout.

Wai Mo Mo Khaing [6] et al this paper the project supposes a movable spy robot with a remote controller by using PIC 16F628A and PIC 16F877. The spy robot is made up of a wireless camera, an antenna, batteries and four movable wheels. The two different PICs are used to remotely control along wireless system and to control Spy robot.

Jha A, Singh A, Turna R, Chauhan S.[7] War Field Spying Robot with Night Vision Camera. Journal of Network Communication and Emerging Technology.

Gopal Krishan, V. R. Singh [8] "Motion Control of Five Bar Linkage Manipulator Using Conventional Controllers Under Uncertain Conditions", International Journal of Intelligent Systems and Applications (IJISA),

III. OBJECTIVES OF THE RESEARCH WORK

The objectives of this research work as follows

1) To target the objects through live picture streaming.
2) To develop an android application to control the robot through wireless technology.
3) To study and analyze the other scope of the project identified.
4) Real time image transfer to Smartphone
5) The whole path that robot transverse is being seen by the wireless camera

IV. MATERIALS & METHODOLOGY

A. *Matrials Used*

1) Arduino Mega 2560

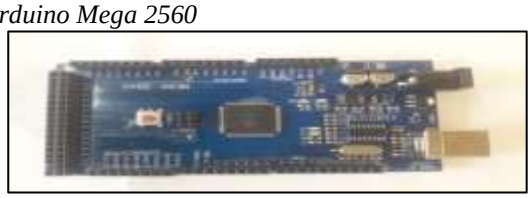

Fig. 2: Arduino Mega 2560

Technical Specifications

- Microcontroller: ATmega1280 or 2560
- Operating Voltage: 5V
- Input Voltage(recommended): 7-12V
- Input Voltage(limits): 6-20V
- Clock Speed: 16 MHz

2) Wi-Fi module (ESP8266)

Figure 3:- Wi-Fi module (ESP8266)

Technical Specifications

- Type32-bit microcontroller
- CPU@ 80 MHz (default) or 160 MHz
- Memory32 KB instruction, 80 KB user data
- Power3.3 V DC

3) Obstacle detection Sensor

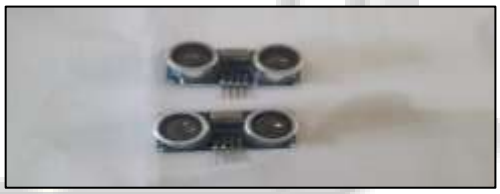

Fig. 3: Obstacle detection Sensor

Technical Specification

- It detects objects from 1-mm to 5-meters

4) Wi-Fi camera

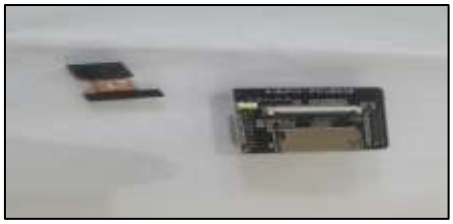

Fig. 4: Wi-Fi camera

Technical Specification

- 180 degree rotation
- Max range 150m

5) Temprature & Humidity Sensor

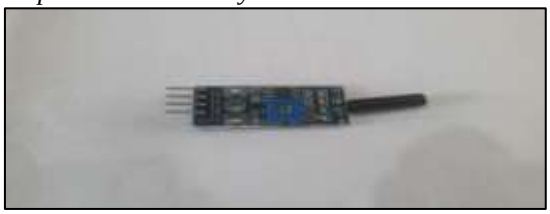

Fig. 5: Temperature & Humidity Sensor

Technical Specification

- Humidity Accuracy: ±5%
- Temperature Range: 0-80 °C.

6) LCD Display

Figure 6:- LCD Display

V. METHODOLOGY FOLLOWED

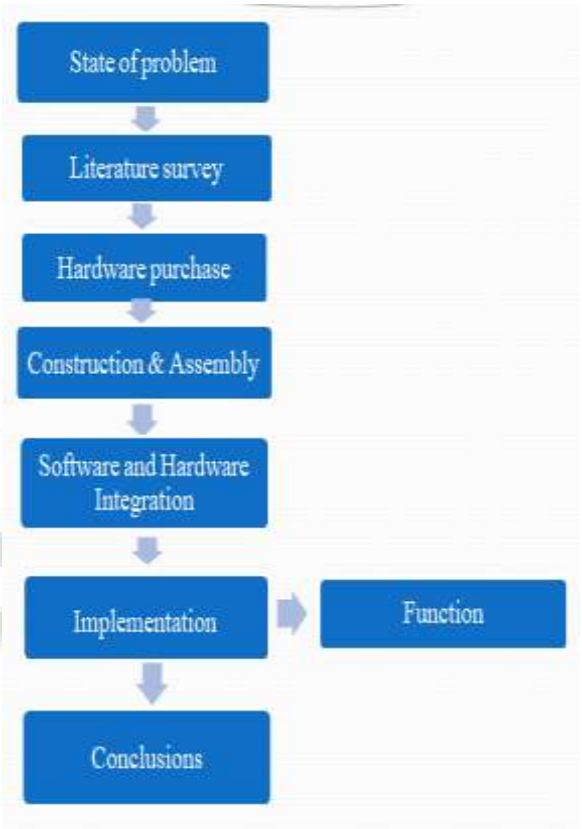

Fig. 7: Methodology followed

VI. RESULTS & DISCUSSION

We have two results i.e. the hardware and the software result. The hardware includes the robot which runs on DC motors. The input to the motors is provided by the motor driver shield. The input to the driver shield is provided by the arduino board. The navigational inputs are given by the user to the arduino board using the android application via Wi-Fi. The arduino board, on receiving the signal, processes it and produces the appropriate output. The communication between the android application and the arduino board takes place using the Wi-Fi module which is interfaced with the arduino board. It provides serial communication between the application and the Arduino.

VII. CONCLUSION

We have successfully implemented the working of the wireless real time image transferring spy robot controlled

using android mobile device. The robot is successfully controlled using the android application through the wireless Wi-Fi technology. Even the real time image transferring is successfully achieved using the Wi-Fi technology on our designed android application.

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