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Telegram based IoT Robot

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***Abstract*—In this project, we presents compact portable robot with Raspberry pi controller Node MCU as central driving functional unit with novel features of wireless control using TELEGRAM APPLICATION in anywhere. The main contribution of the project is that it leverages the efficiency of robot's motion controlling system .These innovative technologies have potentials to build a board less communication society a symbolic society between humans and robots. Commands and data are stored in Telegram APP which delivers to device when it is ready to receive. The advantages of this are reliability, flexible and scalable in nature. In an intense study of Internet of Things, I found it to be hypothetical based on its purpose of application. It means IoT provides a lot of automation by connecting things. Connecting things has been made easy by the various sensors and embedding them to the devices.**

I. INTRODUCTION

Robotics is an art of designing, applying by using robot in human endeavours. A robot is a machine which is designed to perform a particular task based on the programming done by the user. It can perform multi task at a time. Nowadays most of the industries are automated. The development of automation introduces the robots into the industries to perform the risky jobs which cannot be done by the human. The mobile robot was fully controlled by the webpage and the commands from the LINUX platform via RASPBERRY PI were received by the microcontroller. Here the system is proposed with the help of low cost PIR sensor and smoke sensor to trace out the intruders and to detect the fire accidents by using Raspberry pi. The Internet based robotic system is implemented to control a robot lawnmower. The control can be done by using a pc based technology. This robot is developed to connect with internet through VBscript, HTML and JAVA [1].The simulation is made through the MATLAB platform. The MATLAB uses the MRC algorithm which has been translated into VHDL model and then it is convertedconverted as logic gate level through VLSI design, implementation [2].This type of mobile robot is implemented with speed control and position on various CCD camera and the sensors with fuzzy detection method and line detection algorithms are designed. The positioning controller is used to observe not only on image capturing process algorithm, due to this controller has been operated independently from speed and fast running using microprocessor based optical sensors which is mounted on the robotic vehicle [3].This Robotic vehicle can be controlled by a simple Skype text messages sent by the user. A webcamera is externally connected to the robot, and a video is captured and send back to the operator through the use of Skype video. This robot is connected to the pc by wireless communication method through two Xbee modules [4]. This paper contains the information for controlling a robotic vehicle movement through the use of internet. The images sent

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by the robotic vehicle to the user. This determines whether the size of the image is small or large depending upon the speed of the Raspberry pi [6].The controlling of the spy robot by sending vocal commands to it depends upon the user. The voice communication is a most efficient in human robot through interaction among the media system. This command is used to control the robotic arm movements and visualize the area to provide the control of the robot [7].This paper presented a design of robot to control using the DTMF tone generated on pressing the keypad buttons of a mobile phone by the user. This can be done by interfacing the mobile with internet connection. It can able to control the robot continuously[8].

The development method of using UI is an AJAX platform, this UI is better when compared to the HTML forms. The user is the whole responsible for the activation of the code to produce the UI, which can be done by receiving a live video [9]. This paper presents the interfacing of internet to the robots in public places. The interface results in low bandwidth of network connections and shared control throughinteraction with the people in the robot's environment [10]. Due to low cost and reduced size of the robot makes it has main part in many fields like home applications. Home security is one of the important applications of home robots developed. In this system, camera is mounted on fixed location such as doors, windows, walls and ceilings also [11]. Control of robot is done by using a pc, Android mobile or a laptop which is controlled via website and there will be the presence of buttons to control the movements of the robots. It can also be controlled by the hand gestures methodology. A robot can perform the particular risky tasks which cannot be done by the user. The robots are used in its specific fields of applications such as office, military, hospital, school and agricultural places. The webcam will capture live data in the surroundings and then send it to a desired device through internet. The user will be observing this data on the monitor at the user end. According to the movement, the user will control the wheel through the webpage by using Raspberry pi and Arduino controller. The input given to the webpage is sent through the internet and desired movement occurs at the robot end. In case of any camera fault occurs, the whole process may become failure. This is the main drawback of that type of robot. And also it requires more hardware components to be interconnected.

II. Proposed Method

The construction of Mobile robot with the help of programs an internet connection is established between the robotic vehicle and the user. This robot motion can be controlled by the webpage through Raspberry pi board. The robot captures the images using a webcam and stored them into the memory. It captures and sent the live images using internet at a rate sufficient to make them as like a live video to the human eye. By overcoming the existing technique, the sensors are included to increase the efficiency of the project. In case of any fault occurs in the camera the PIR sensor detects the object motions and also introducing an advanced future of Smoke sensor that detects the smoke produced during fire accidents and bomb blast

III. Design and Implementation

A. Raspberry pi

The Raspberry Pi Compute Module (CM1), Compute Module 3 (CM3) and Compute Module 3 Lite(CM3L) are DDR2-SODIMM-mechanically-compatible System on Modules (SoMs) containing processor, memory, eMMC Flash (for CM1 and CM3) and supporting power circuitry. These modules allow a designer to leverage the Raspberry Pi hardware and software stack in their own custom systems and form factors. In addition these module have extra IO interfaces over and above what is available on the Raspberry Pi model A/B boards opening up more options for the designer. The CM1 contains a BCM2835 processor (as used on the original Raspberry Pi and Raspberry Pi B+models), 512MByte LPDDR2 RAM and4Gbytes eMMC Flash. The CM3 contains a BCM2837 processor (as used on the Raspberry Pi 3), 1Gbyte LPDDR2 RAM and 4Gbytes eMMC Flash. Finally theCM3L product is the same as CM3 except the eMMC Flash is not fitted, and the SD/eMMC interface pins are available for the user to connect their own SD/eMMC device. Note that the BCM2837 processor is an evolution of the BCM2835 rocessor. The only real differences are that the BCM2837 can address more RAM (up to 1Gbyte) and the ARM CPU complex has beenupgraded from a single core ARM11 in BCM2835 to a Quad core Cortex A53 with dedicated 512KbyteL2 cache in BCM2837. All IO interfaces and peripherals stay the same and hence the two chips arelargely software and hardware compatible.Thepinout of CM1 and CM3 are identical. Apart from the CPU upgrade and increase in RAM theother significant hwardware differences to be aware of are that CM3 has grown from 30mm to 31mmin height, the VBAT supply can now draw significantly more power under heavy CPU load, and theHDMI HPD N 1V8 (GPIO46 1V8 on CM1) and EMMC EN N 1V8 (GPIO47 1V8 on CM1) are nowdriven from an IO expander rather than the processor. The

Raspberry Pi 3 Model B is the third generation Raspberry Pi. This powerfulcredit-card sized single board computer can be used for many applicationsand supersedes the original Raspberry Pi Model B+ and Raspberry Pi 2 ModelB. Whilst maintaining the popular board format the Raspberry Pi 3 ModelB brings you a more powerful processer, 10x faster than the first generation Raspberry Pi.

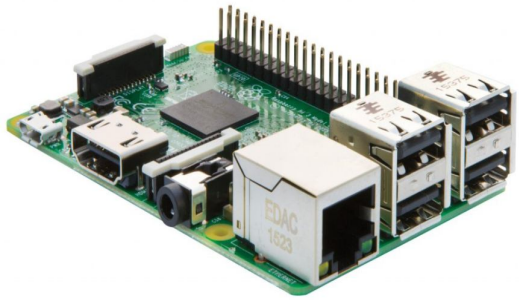
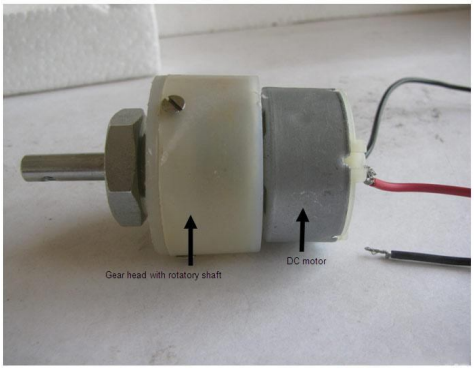


FIG :3.1 Raspberry pi Controller

B. Motor

Geared DC motors can be defined as an extension of DC motor which already had its Insight details demystified here. A geared DC Motor has a gear assembly attached to the motor. The speed of motor is counted in terms of rotations of the shaft per minute and is termed as RPM .The gear assembly helps in increasing the torque and reducing the speed. Using the correct combination of gears in a gear motor, its speed can be reduced to any desirable figure. This concept where gears reduce the speed of the vehicle but increase its torque is known as gear reduction. This Insight will explore all the minor and major details that make the gear head and hence the working of geared DC motor.The lateral view of the motor shows the outer protrudes of the gear head. A nut is placed near the shaft which helps in mounting the motor to the other parts of the assembly.



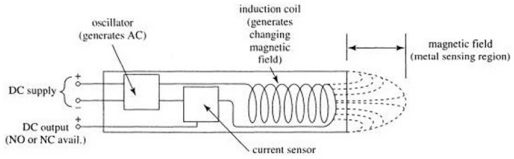
C. Power Supply

Power supply is a reference to a source of electrical power. A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit or PSU. The term is most commonly applied to electrical energy supplies, less often to mechanical ones, and rarely to others.Power supplies for electronic devices can be broadly divided into linear and switching power supplies. The linear supply is a relatively simple design that becomes increasingly bulky and heavy for high current devices; voltage regulation in a linear supply can result in low efficiency. A switched-mode supply of the same rating as a linear supply will be smaller, is usually more efficient, but will be more complex.

D. Metal Sensor

Inductive proximity sensors operate under the electrical principle of inductance. Inductance is the phenomenon where a fluctuating current, which by definition has a magnetic component, induces an electromotive force (emf) in a target object. To amplify a device's inductance effect, a sensor manufacturer twists wire into a tight coil and runs a current through it. An inductive proximity sensor has four components; the coil, oscillator, detection circuit and output circuit. The oscillator generates a fluctuating magnetic field the shape of a doughnut around

the winding of the coil that locates in the device's sensing face. When a metal object moves into the inductive proximity sensor's field of detection, Eddy circuits build up in the strength and triggers an output from the output circuitry when the oscillator becomes reduced to a sufficient level.



E. Wi-Fi dongle

The term "dongle" means which is to provide additional forms of wireless connectivity to devices (Wi-fi orBluetooth support) as well as small form factor digital media players and personal Computer meant to plug directly into an HDM input

Fig.8 Wi-Fi dongle diagram

IV. Result and Analysis

The monitoring and controlling of the mobile robot via internet using Raspberry pi board through the use of creating the webpage is done successfully. It needs only the Internet connection which can be obtained by wireless communication network. There is no interrupt can be occurred duringthe commands to the robot from the user and the response from the robot to user. The robot can be easily controlled through using the personal computer or a smart phone. By use of the internet there will be a small time delay occurs which depends on the type, speed and distance of the network. This mobile robot can be controlled by the user from everywhere in the world through Internet of Things (IOT).The webpage created to control the robotic movements is secured by the unique user name and password which cannot be hacked by anyone.

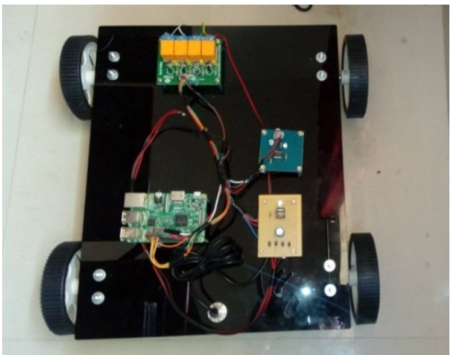


Fig 9. Diagram of Telegram Robot

V. Conclusion

The device can move front, back, right and left which also contains a metal sensor to detect the metal parts. It can be controlled using a raspberry pi controller and the instructions or commends passed to robot through a

Telegram app, the robot can be controlled from anywhere through this app. By using an Internet we are interacting with a robot.

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