

Dataveillance Robot Using Raspberry Pi

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Abstract:- The primary target of this paper is to build up a virtual condition for distinguishing suspicious and focused on places for client with no loss of human life. It depends on advancement of a robot vehicle for watching/seeing the suspicious items. It can ceaselessly screen the objects. Robot can move toward each path (left, right, forward and backward).It is utilized for video reconnaissance what's more, remotely controls the specific spot utilizing Wi-Fi as medium. The webcam which is set on the automated unit will catch the video and it transmits vivacious to the remote end. The significant utilization of this paper can be dissected utilizing HTML site page which can be utilized to control the development of the robot.L293D is fourfold double H-Bridge engine driven IC.

Keywords: Raspberry Pi3, Robotic Chassis, Web, USB Cameras.

I. INTRODUCTION

Raspberry Pi is a card estimated PC. It works nearly same as a PC. There are various sorts of observation frameworks accessible, for example, camera, CCTV and so on., In these sorts of observation frameworks, the individual who is stationary and is situated in that specific region can as it were ready to see what's going on in that place. Though, here, regardless of whether the client is moving starting with one spot then onto the next, he/she can monitor what's going on in that specific spot at specific time. Additionally, another preferred position is that it offers protection on the two sides since it is being seen by just a single individual. The other huge bit of leeway is that, it is a simple and basic circuit for understanding and structuring. The working framework utilized here is Raspbian OS. Raspbian Operating system must be introduced with the goal that the picture can be transmitted to the cell phone Closed circuit TV observing framework has now become a crucial gadget in the present society. Robots have discovered a radically expanding interest for various scope of work in life. Their utilization in armed force and other security division expands step by step. Our paper incorporates one such occasion of how a robot can be of use to human race when all is said in done. Right now, utilize the web to build up correspondence between the client and a mechanical vehicle. This is a reliable association and a persistent video criticism is accessible to control the mechanical vehicle. Because of the utilization of the web, there is no constraint on range or separation between the client and the mechanical vehicle. It is proposed to address the lower side at cost, effective, rapid handling and control equipment for oneself exploring mechanical technology application. Plan and Execution of a Robotic Vehicle with Real-Time Video Input Control by means of Internet/webpaper outline on way to deal with control an automated vehicle utilizing the web as the correspondence medium between the client and

mechanical vehicle. Raspbian OS must be introduced with the goal that the picture what's more, recordings can be seen to the cell phone legitimately. Shutcircuit TV observing framework has now gotten an irreplaceable gadget in the present society. There are afferent places, for example, school, general stores, society security where we are having their own CCTV framework for all day, every day observing

II. METHODOLOGY

This is the Internet of things (IOT) based venture, where we are especially utilizes the Raspberry Pi, USB web camera and two DC engine with Robot body to construct this Automated vehicle arrangement. It has a web camera mounted over it, through which we will get live video feed and the fascinating part here is that we can control and move this robot from an internet browser over the web. As it very well may be controlled utilizing website page, implies it can likewise be controlled by utilizing the other keen gadgets where we can control through the website page. We constructed a website page in HTML which has Left, Right Forward Backward connections, tapping on which we can move the robot toward any path. Here we utilize the term "Movement" for getting live Video data from USB camera and utilized "Jar" for sending orders from website page to Raspberry Pi utilizing python content to move the Robot. The webcam will catch live information with respect to its environment and afterward send it to an ideal gadget through web. The client will be watching this information on the screen at the client end. As indicated by the ideal development, the client will control the automated vehicle through the website page accessible at the client end.

Fig: Block Diagram of Robot

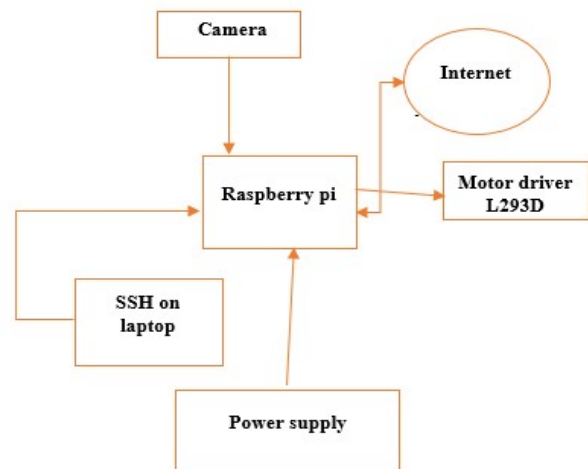
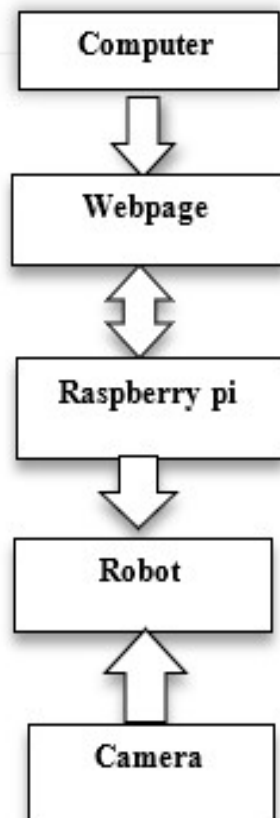


Fig: Flow chart of working



III. DESIGN AND IMPLEMENTATION

3.1 Raspberry Pi

Raspberry pi is utilized for making robot remote and web based SSH Raspberry Pi and afterward the recordings are transmitted remotely from the robot to the client's screen, from where the client can advantageously control the mechanical vehicle's development and furthermore the mechanical arm development. Raspberry pi is associated with the dongle which empowers raspberry pi to transmit over the web organize. Raspberry-Pi Module.

Raspberry Pi utilizes a SD card for booting and for memory as it doesn't have an inbuilt hard plate for capacity. Raspberry Pi requires 5volt supply with least of 700-1000 mA current and it is fueled through smaller scale USB link. ARM11 just requires 3.3 volt of supply which it takes with the assistance of straight controller. 5volt is required for the USB ports. It works at 700M Hz. We use python or on the other hand implanted C to compose code into the raspberry pi. It has a solid handling capacity because of the ARM11 engineering and Linux-based framework. Regarding interface furthermore, control, it has 1 SPI, 1 UART, 1 I2C and 8 GPIO, which fundamentally meet the control necessity. There are anything but difficult to utilize open source fringe driver libraries.



Fig: Raspberry pi 3 B+

3.2 Motor Driver IC L293D

The L293 and L293D are quadruple high-current half-H drivers. These devices are designed to drive a wide array of inductive loads such as relays, solenoids, DC and bipolar stepping motors, as well as other high-current and high-voltage loads. All inputs are TTL compatible and tolerant up to 7V Each output is a complete totem-pole drive circuit, with a Darlington transistor sink and a pseudo-Darlington source. Drivers are enabled in pairs, with drivers 1 and 2 enabled by 1,2EN and drivers 3 and 4 enabled by 3,4EN. When an enable input is high, the associated drivers are enabled, and their outputs are active and in phase with their inputs. When the enable input is low, those drivers are disabled, and their outputs are off and in the high-impedance state. With the proper data inputs, each pair of drivers forms a full-H (or bridge) reversible drive suitable for solenoid or motor applications.

On the L293, external high-speed output clamp diodes should be used for inductive transient suppression. On the L293D, these diodes are integrated to reduce system complexity and overall system size. A VCC1 terminal, separate from VCC2, is provided for the logic inputs to minimize device power dissipation. The L293 and L293D are characterized for operation from 0°C to 70°C.



Fig: IC L293d Motor Driver

3.3 Reason SSH?

SSH is otherwise called made sure about shell. It is a system convention by which we can discuss one PC with another in a scrambled manner. This is a sort of passage with the assistance of which we can remotely get to one PC from other or then again, we can safely send our records or reports to open Wi-Fi. For instance, in the event that you need to send a private record to your companion and both of you are associated with same open Wi-Fi. Right now, numerous others are moreover associated with that open Wi-Fi, there is the reasonable plausibility that somebody can get to your information, so the record you needed to impart to your companion can be hacked by the center individual. To dodge this and to conquer this disadvantage we can utilize a protected shell convention. SSH employments open key cryptography, so whatever message you send, it will be first encoded and that message will be unscrambled in the collector end. For encryption and decoding, sender furthermore, beneficiary have a made sure about key with the goal that center individual can't hack your information since he won't have the address of the made sure about key. Right now, can convey starting with one PC then onto the next with the assistance of SSH convention with reasonable security careful cryptography.

IV. NETWORK IMPLEMENTATION

Robot comprises of a web camera, voltage controller hardware with L293D engine driver and raspberry pi. The continuous video and control are shown in the site page which can be seen from anyplace on the planet utilizing web or inside the Wi-Fi range and one can control it utilizing those control gave. Setting up the raspberry pi and establishment of Operating framework from raspberrypi.org.

Here we are utilizing raspbian OS. Introduce the required bundles in the pi by utilizing appropriate orders in terminal window and interface the camera to opening adjacent to the Ethernet port. Presently plan the control page that gives an approach to control our robot this page is planned HTML and python and compose the controlling of the robot code based on the L293D IC rationale we have utilized. Interface with a system through ready Wi-Fi. Once it is associated through clay programming arrangement we got the IP address we can utilize it for controlling purpose.

V. PROGRAMMING

Python programming is used here. Software design is divided into 4 codes namely: Webcam Server is the code run in the Raspberry Pi to capture the images and stream them over the internet. Here the images will be compressed into .jpg format to reduce their size prior to their transmission over the internet. They are sent using byte array over the UDP socket. Webcam Client is run by the user to receive this image in the form of byte array. They are then displayed on the monitor at a rate closer to 5 images per second so that they appear like a continuous video. Motor Server is run by the user. Monitoring

the video, the user controls the robotic vehicle or the robotic arm accordingly. This is done by accepting input either from the keyboard or the webpage. It is done by checking the key press events. Motor Client as per the input from the user, either the robotic vehicle or the robotic arm move. This is done by making High or Low the desired GPIO pins of the Raspberry Pi. 4 GPIO pins are connected to the 4 servo motors and 4 to the motor driver IC L293D.

VI. APPLICATION

1. Indoor spying of stockroom, grounds observation to check the inappropriate exercises.
2. Following areas of fear monger associations and afterward plan an assault at a reasonable time.
3. Making video observation of any debacle influenced zone where individuals can't go.
4. Field see reconnaissance of indoor and open air business complex, production lines and government structures/association.

VII. FUTURE SCOPE

There are bunches of upgrades that can be made on the present plan and innovation and heaps of extra element check be included. We can utilize various kinds of sensor with the goal that we can utilize robot in various field for example Temperature Sensor, Pressure Sensor. A multipurpose robot can be made by remote system, extending from reconnaissance and home security to mechanical applications where the client need not be available at the work place face to face yet can do it from his home itself.

VIII. CONCLUSION

At the present time used raspberry pi managing Raspbian Operating framework. As the correspondence is done with the help of web so repression of extent of action doesn't rise and right now can screen any remote domains. One can without a lot of a stretch screen similarly as control the development of the computerized unit.

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