

WOMEN SAFETY NIGHT PATROLLING IOT ROBOT

Lakshmi Naga Srivani Gujjani¹, Venkata Satya Komala Arikatla², Shireesha Chilakaluri³,

B.Sireesha⁴, Dr.G.Lakshminarayana⁵

Assistant Professor⁴, Professor⁵, UG Student^{1,2,3}

DEPT OF ECE

SVR ENGINEERING COLLEGE, NANDYAL

ABSTRACT

Nowadays Women Safety is the biggest concern in many parts of the world. There is still a fear in alone areas for women as well as men. So here we propose a security patrolling robot using Raspberry PI. The system uses cameras and mic mounted on robotic vehicle for securing any premises. The robotic vehicle moves at particular path and is equipped with camera and sound sensors. It uses a predefined line to follow its path while patrolling. It stops at particular points and moves to next points if sound is detected. The system uses IR based path following system for patrolling assigned area. It monitors each area to detect any problem using combination of two HD cameras. It has the ability to monitor sound in the premises. Robot hears Any sound after area is quite and it starts moving towards the sound on its predefined path. It then scans the area using its camera to detect any human faces detected. It captures and starts transmitting the images of the situation immediately to the IOT website. Here we use IOT gecko for receiving transmitted images and displaying them to user with alert sounds. Thus we put forward a fully autonomous security robot that operates tirelessly and patrols large areas on its own to secure the facility.

I. INTRODUCTION

Women are adept at mobilizing diverse groups for a common cause. They often work across ethnic, religious, political, and cultural divides to promote peace. We are all aware of importance of women's safety, but we must realize that they should be properly protected. Women are not as physically strong as men, in an emergency situation a helping hand would be a relief for them. The best way to minimize your chances of becoming a victim of violent crime (robbery, sexual assault, rape, domestic violence) is to identify and call on resources to help them out of dangerous situations. Whether it is an immediate trouble or they get separated from friends during a night out and don't know how to get home, having these

applications can reduce the risk and bring assistance when needed. Although several were originally developed for students to reduce the risk of sexual assault on campus, they are suitable for all women in the light of recent outrage in Delhi which shook the nation and woke us to the safety issues for our daughters, people are gearing up in different ways to fight back. The status of women in India has gone through many great changes over the past few millennia. In modern India, women continue to face social challenges and are often victims of abuse and violent crimes and, according to a global poll conducted by Thomson Reuters, India is the "fourth most dangerous country" in the world for women, and the worst country for women among the G20 countries. This project focuses on a security robot that is designed solely to serve the purpose of providing security and safety to women so that they never feel helpless while facing such social challenges. The Delhi "Nirbhaya" case that triggered the whole nation was the greatest motivation for this project. It was high time women needed a change.

II. POWER SUPPLY

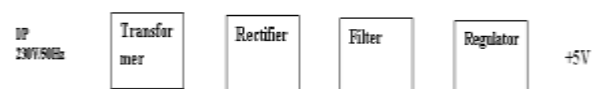
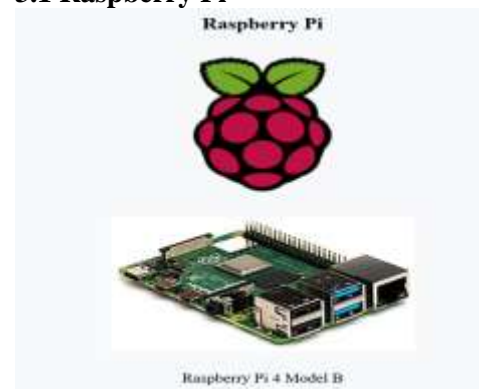


Figure: Power Supply

III. HARDWARE

3.1 Raspberry Pi



When booting, the time defaults to being set over the network using the Network Time Protocol (NTP). The source of time information can be another computer on the local network that *does* have a real-time clock, or to a NTP server on the internet. If no network connection is available, the time may be set manually or configured to assume that no time passed during the shutdown. In the latter case, the time is monotonic (files saved later in time always have later timestamps) but may be considerably earlier than the actual time. For systems that require a built-in real-time clock, a number of small, low-cost add-on boards with real-time clocks are available.^{[87][88]}

The RP2040 microcontroller has a built-in real-time clock but this can not be set automatically without some form of user entry or network facility being added.

Various operating systems for the Raspberry Pi can be installed on a MicroSD, MiniSD or SD card, depending on the board and available adapters; seen here is the MicroSD slot located on the bottom of a Raspberry Pi 2 board.

3.4 L293D

L293D is basically a high current dual motor driver/controller Integrated Circuit (IC). It is able to drive load having current up to 1A at the voltage ranging from 4.5V to 36V. Motor driver usually act as current amplifier because they receive a low current signal as an input and provides high current signal at the output.

Motors usually operates on this higher current. L-293D has to builtin H-Bridge driver circuits and is able to control two DC motors at a time in both clockwise and counter clockwise direction. It has two enable pins and they should be kept high in order to control the motor. By changing the polarity of applied signal motor can be rotated in either clockwise or counter clockwise direction. If L 293D enable pin is high, its corresponding driver will provide the desired out. If the enable pin is low, there will be no output. L-293D has different features including internal ESD protection, large voltage supply range, large output current per channel, high noise immunity input etc. L 293D plays a vital role in electronics era and has several different applications e.g relay drivers, DC motor drivers, stepping motor drivers etc. The further

detail about L 293D motor driver/controller will be given later in this tutorial.

L293D Motor Driver



3.5 L293D Pinout

- Pinout diagram of any device presents the pins configuration through a completely labelled diagram.
- L293D pinout diagram is shown in the figure given below.



Figure L293D

3.6 DC Motors

The brushed DC motor is one of the earliest motor designs. Today, it is the motor of choice in the majority of variable speed and torque control applications.

Advantages

- Easy to understand design
- Easy to control speed
- Easy to control torque
- Simple, cheap drive design

Easy to control speed

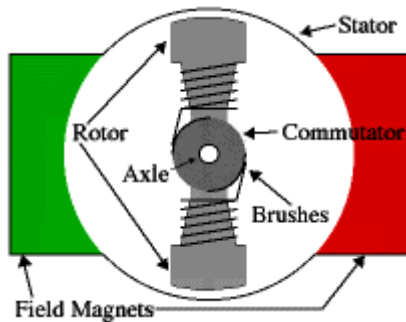
Controlling the speed of a brushed DC motor is simple. The higher the armature voltage, the faster the rotation. This relationship is linear to the motor's maximum speed. The maximum armature voltage which corresponds to a motor's rated speed (these motors are usually given a rated speed and a maximum speed, such as 1750/2000 rpm) are available in certain standard voltages, which roughly increase in conjunction with

horsepower. Thus, the smallest industrial motors are rated 90 VDC and 180 VDC. Larger units are rated at 250 VDC and sometimes higher.

Specialty motors for use in mobile applications are rated 12, 24, or 48 VDC. Other tiny motors may be rated 5 VDC.

WORKING OF DC MOTOR

In any electric motor, operation is based on simple electromagnetism. A current-carrying conductor generates a magnetic field; when this is then placed in an external magnetic field, it will experience a force proportional to the current in the conductor, and to the strength of the external magnetic field. As you are well aware of from playing with magnets as a kid, opposite (North and South) polarities attract, while like polarities (North and North, South and South) repel. The internal configuration of a DC motor is designed to harness the magnetic interaction between a current-carrying conductor and an external magnetic field to generate rotational motion.



3.7 Liquid Cristal Display

A liquid crystal display (LCD) is a thin, flat display device made up of any number of color or monochrome pixels arrayed in front of a light source or reflector. Each pixel consists of a column of liquid crystal molecules suspended between two transparent electrodes, and two polarizing filters, the axes of polarity of which are perpendicular to each other. Without the liquid crystals between them, light passing through one would be blocked by the other. The liquid crystal twists the polarization of light entering one filter to allow it to pass through the other.

A program must interact with the outside world using input and output devices that communicate directly with a human being. One of the most common devices attached to an controller is an LCD display. Some of the

most common LCDs connected to the controllers are 16X1, 16x2 and 20x2 displays. This means 16 characters per line by 1 line 16 characters per line by 2 lines and 20 characters per line by 2 lines, respectively.

HC-SR04 Ultrasonic Sensor

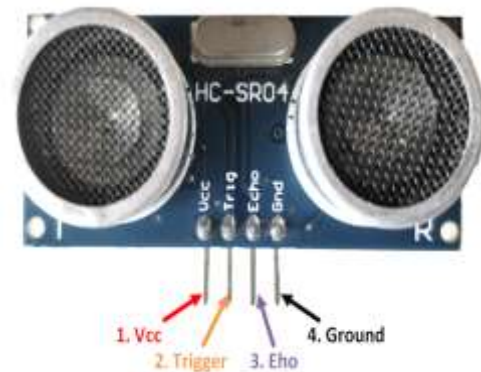
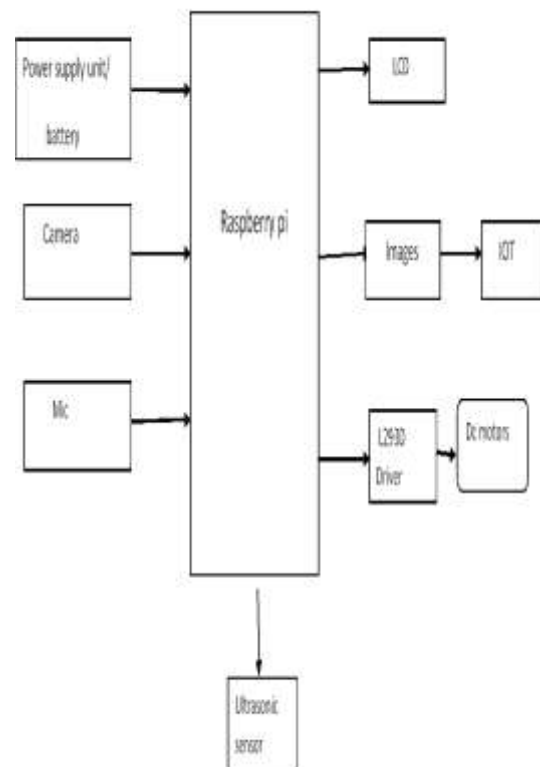


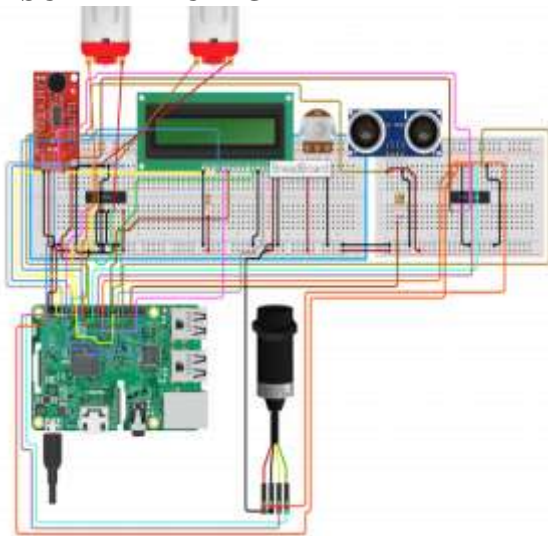
Figure Ultrasonic

IV.RESULT:

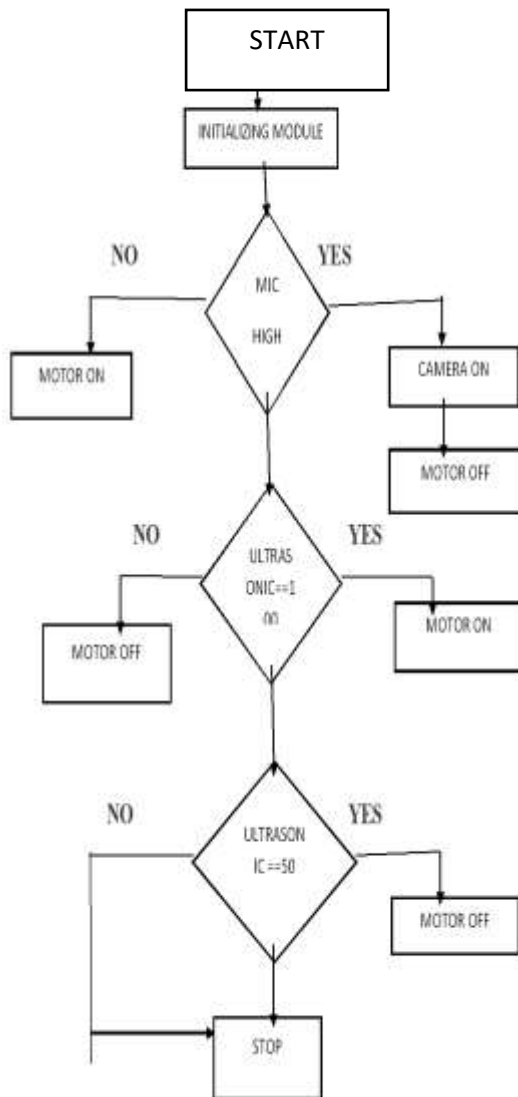
4.1BLOCK DIAGRAM



4.2 SCHEMATIC DIGRAM



4.3 FLOWCHART



WORKING

If the mic is high then camera on and motor of .Mic is low then motor on. When ultrasonic sensor ==100 then motor on otherwise motor off. When ultrasonic ==50 then motor off.

V. CONCLUSION

A wide range of area surveillence is done using the night vision camera fitted on the rover and also automatic system when the sound is detected robot will follow the particular path and go to that spotted area and capture the area and send to police station server using IoT. This concept is an automatic smart way to patrolling overnight to save women.

Four algorithms namely Adaboost, Bagging, Stacking, Enhanced Reweight mechanism in the ensemble were considered in this paper. Results show that the new ensemble algorithm gives better accuracy in most cases. 95% accuracy is given by the new ensemble algorithm to correctly predict the crimes.

REFERENCE:

1. J. Ghanem Osman Elhaj Abdalla ,:‘Implementation of Spy Robot for A Surveillance System usingInternet protocol of Raspberry Pi’, published in 2017 International conference on recent trends inElectronicsinformation andcommunication technology.
2. Takato Saito and Yoji Kuroda:‘Mobile robot localization using multiple observations based onplacerecognitionandGPS’,publishedinIEEEI nternationalConferenceonRoboticsandAutomat ionRoad detectionat nightbased onaplanar reflection modelin2013.
3. Cheng Tang, QunqunXie, Guolai Jiang, YongshengOu,: ‘Road detection at night based on a planarreflection model’, published in IEEE International Conference on Information and Automation(ICIA) in 2013.
4. Kirk Mac Tavish, Michael Paton, and Timothy D. Barfoot,: ‘Night Rider: Visual Odometry UsingHeadlights’published in14th ConferenceonComputerand RobotVisionin2017
5. Zhonghuna Han and Tingting Li,: ‘ Research Sound Source Localization and Real-Time FacialExpressionRecognitionforSecurityRobot ’,publishedinJournal ofPhysical Conferencein2020