International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 03 | Mar 2020 www.irjet.net p-ISSN: 2395-0072

ANIMAL IDENTIFICATION IN ROADS AND ALERT SYSTEM for PASSENGERS USING INTERNET of THINGS

Dr.V.SHANTHI[1], FAZIL.S.K[2], PREMAVATHI.P[3], AJAYRAJ.K[4]

[1]Professor, Department of Electronics and Communication Engineering, Park College of Engineering and Technology, Coimbatore, Tamil Nadu, India
[2,3,4]Students, Department of Electronics and Communication Engineering, Park College of Engineering and Technology, Coimbatore, Tamil Nadu, India

---

Abstract – *This paper is intended to build an efficient module that can identify the animal interruption in the roads, where animal crossings occurs often. The main objective of this paper is to safeguard the human from animal attacks. This module uses raspberry-pi BCM2837 and helps in identifying the presence of animals and offers a warning. PIR sensor is used to sense the animal footprints. In addition to the sensor Digital image processing is used to map the image of animal captured by the camera. In-case of animal detection, alert signal is sent to the check-post through Internet of Things. LED and Buzzer are used for alerting the animal presence to the passengers on the road. GSM/ Wi-Fi module is interfaced with IoT system so that the passengers on road get the alert SMS.*

Key words: *BCM2837, PIR Sensors, Digital Image Processing, LED, Buzzer, Camera, GSM/ Wi-Fi module, IoT.*

1. INTRODUCTION

Now -a-days, animal interruption in the roadways of hill areas or frequent animal passing areas, is happening more. Due to this, the passengers who travel on those roads either face difficulties or get attacked by the animal. Another cause is that the vehicles make accidents on animal without knowing their presence. In order to safeguard the humans and animal, PIR sensor is placed on the both sides of the road. This sensor detects the animal by their footprints and gives notification through Raspberry pi. Digital image processing system is used to map the image captured by the cameras placed at that spot. If the animal is identified the raspberry pi turn ON the LED and the buzzer which is placed on the road certain distance from that spot. The IoT make an alert to check-post. GSM/Wi-Fi module is used to send SMS alert to passengers who registered their mobile number in the check-post. By this idea, both the lives of animal and human can be saved and prevent vehicle damage.

2. PROPOSED SYSTEM

In this paper, the PIR sensor to detect the animal's interruption in roads and also image processing is used to identify the animal. The presence of animal is intimated to the passengers who travel at that spot through the alert system. The raspberry-pi for the interface between the sensors and camera. IoT is used to send the alert system to the check-post. From there using GSM/Wi-Fi module, the alert SMS is sent to the passengers informing the presence of animals.

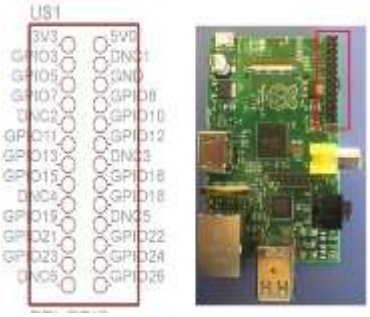

Fig.1: BCM2837 Pin Diagram

2.1 SYSTEM BLOCK DIAGRAM

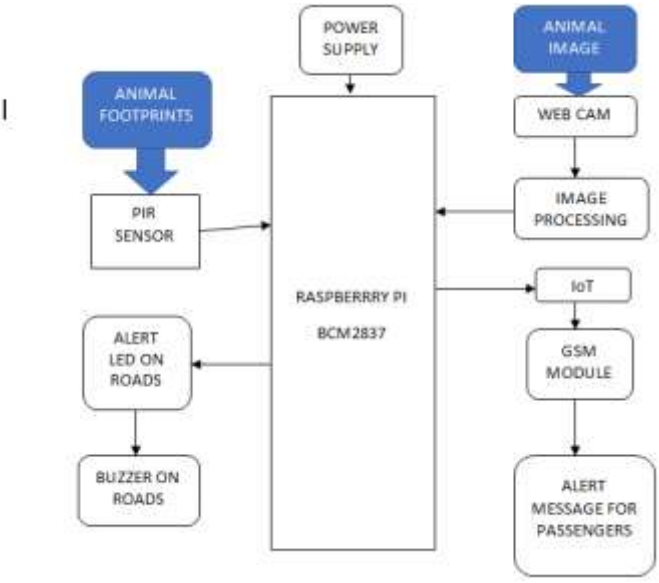

Fig.2: Block Architecture

3. DESIGN METHODOLOGY

3.1 PIR SENSOR

PIR motion sensor, sense the motion of animal and detect whether the animal has moved in or out of the sensor range. PIR are basically made of a pyro-electric sensor which detect

the level of infrared radiation. Every animal has some low level of radiation.

The sensor in the motion detector is actually split into two halves. The reason for that is to detect the motion (change) not average IR levels. The two halves are wired up so that the cancel each other out. If one half sees more or less IR radiation than the other, the output will change from high to low or low to high. This PIR sensor is used to detect whether the animal has left or entered the area range of the sensor.

Fig-3: PIR Sensor

3.2 WEB CAMERA

A webcam is a video camera that provides its real time image through a computer network. When the image is captured by the camera, the video stream may be viewed via systems such as the internet, and emailed as an attachment. When sent to a remote location, the video stream may be saved. Unlike an IP camera, a webcam is generally connected by a USB cable, built into computer hardware, such as laptops, PC's, etc.

The term webcam may also be used in its original sense of a video camera connected to the Web continuously for a long time, rather than for some amount of time, generally supplying a view for anyone who visits its web page over the Internet. Some of them, for example, those used as online traffic cameras, are more costly, rugged video cameras.

Fig.4: Web camera

3.3 LED

The basic LED circuit is an electrical circuit which gives power to enhance a light-emitting diode (LED). It consists of four components connected in series which consists of a voltage source, resistor, a LED, and followed by a switch. The switch may be replaced with another component to form a continuity tester. Two diodes may be placed in parallel in the circuit, but connected anode to cathode. The second diode may be used to protect the LED against reverse bias, which can damage the LED, which is illuminated when the polarity of the voltage source is reversed.

The LED s used will have a forward voltage specified at the intended operating current. When the voltage source Ohm's law is used to calculate the resistor that is used to attain the correct current. The resistor value is computed by subtracting the forward bias voltage value from the supply voltage. Then dividing the value by the desired operating current.

Fig.5 LED

3.4 BUZZER

A buzzer or beeper is a signaling or alerting device, typically used in automobiles, household appliances. It is most commonly consists of a number of switches or sensors connected to the circuit unit that predicts which button was pushed or pressed at the present time has lapsed. It usually illuminates a light on the appropriate button or control panel of the circuit and gives a warning sound in the form of a continuous or beeping sound. Primarily LED was based on an electro-mechanical system which was similar to an electric bell without a metal gong.

Fig.6: Buzzer

4.2. PYTHON

"Python" is a programming computer language developed in the 1980's and first come into existence in 1991. It's design philosophy make programmer code readability. It is significant to understand that there is always more ways to solve a problem. This also defines that you should not need to know about the language to. Python has strength that makes it an ideal language to learn and use: It is completely free. It is very easy to learn and use. Python was designed to be easy and precise for humans to write and execute in short

time, rather than easy for computers to understand and process. Python syntax is more like English language than many other programming languages such as c, c++. Python users then to write programs for small, specific jobs. These programs are usually for the programmer's eye only, and as such are often incomprehensible to everyone but the original programmer.

4.3 PHP LANGUAGE

PHP is a server-side scripting language designed only for web development and other related works. It is also used as a general-purpose programming language used for the web development. From 2013 PHP was installed on more than hundreds of websites and 2.1 million web servers. It was designed by Rasmus Lerdorf in 1994. The model reference implementation of PHP is now produced by the PHP group. While PHP originally stood for personal home page, which is a recursive acronym. PHP code is usually processed by a PHP interpreter used for web development. Which is usually implemented as a web server's native module? After the PHP code is interpreted and executed, the web server sends the output to its user, in the form of a part of the generated web page.

5. RESULT

The PIR sensor sense the animal footprints and the signal is made HIGH, once the signal is made HIGH the raspberry-pi make the LED and Buzzer turn ON. Simultaneously on other hand the camera detects the animal and the image is compared it with the sample images of database uploaded. The alert signal is passed to the control unit by using internet of Things. When the animals cross-over the prone areas then an alert SMS is sent to the passengers before certain distance from the animal's cross over area. This helps the passengers to safeguard themselves from the risks.

6. REFERENCES

[1] P.Harding and Neil M. Robertson, "Visual saliency from the image features with application to compression," Cognitive Computation., March 2012, vol. 5, no. 1, pp, 76-98.

[2] Minglun Gong and Li Cheng, "Foreground segmentation of live videos using the locally competing 1sVMs," in Proc. IEEE conference, Computation, Vis. Pattern Recognit., Jun, 2011, pp, 2015-2112

[3] Jian. Sun, Wi. Zhang, Xiaoou Tang, and H-Y, Shum, "Background cut," in Proc. 9th European. Conference. Comput. Vis., pattern Recognit, JUN 2006, pp, 628-641.

[4] M.Leordeanu and R. Collins, "Unsupervised learning of objects features from video sequences," in Proc.IEEE conference. computation. Vis. Pattern Recognit., Jun 2005, pp. 1142-1149.

[5] Khulman, Dave, "A Python Book: Beginning Python, Advanced Python, and Python Exercise" in Proc.IEEE conference. Vis., Jun 2018, section 1.1.