ISSN 2394-3777 (Print)
ISSN 2394-3785 (Online)
Available online at www.ijartet.com

International Journal of Advanced Research Trends in Engineering and Technology (IJARTET)
Vol. 7, Issue 7, July 2020

Object Detection and Alerting System in Hairpin Bend

Mr.S.Muthukumar[1], Yazhini.K[2], Ancy cipporoah.L[2], Srinivasan.R[2], Kishor kumar.P[2].
[1]Assistant professor\Department of ECE
Adithya Institute of technology,coimbatore.
[2] UG Scholar,Department of ECE,Final Year
Adithya Institute of Technology,Coimbatore.

Abstract: The transportation of vehicles in hill areas is always a complex travel especially at hairpin bends.The complex turning point of hairpin bend makes it tougher for the people travelling .As people are unable to know the sudden arrival of the opposite vehicles at a larger speed rate. Since the trespassing of animals is at a considerable rate at those regions.The major accidents occur at hairpin bends. Therefore we have arrived at an attempt of producing an alert system based on object detection. Our system proposes a solution of detecting the objects using digital image processing techniques and alerting the vehicles using traffic lights.

I. INTRODUCTION

Hilly regions are always pleasant to travel. But at hairpin bends difficulties in knowing the vehicles approaching from other side, poor visibility at nights and traffic are major difficulties for the drivers which leads to accidents. For example in hilly regions of Uttarkand frequent accidents occur due to sharp bends, traffic accidents etc., on other hand crossing of animals at hillroads like Dhimbamghat roads is also a thread which also lead to animal attack on human beings and road kills. Hence to avoid human animal conflict also we proposed a solution to set traffic lights at hairpin bends and frequent animal crossing areas to alert the drivers. This traffic lights have three colours to indicate animals, vehicles and no obstacle. Our alerting system detects the object through camera and process using object detection technique using MATLAB then the indication is send to LEDs and a LCD

.

Fig1.Accidents at hairpin bend

Fig 2.Animals crossing the road

ISSN 2394-3777 (Print)
ISSN 2394-3785 (Online)
Available online at www.ijartet.com

International Journal of Advanced Research Trends in Engineering and Technology (IJARTET) Vol. 7, Issue 7, July 2020

II. EXISTING TECHNOLOGY

Fig 3.CONVEXMIRRORS

Fig 4.SIGNBOARDS

A. **convex mirrors**

In Convex mirrors vehicles appear closer than the actual distance .The visibility is poor during bad weather conditions and tough to maintain the mirror clean all the time

B. Signboards

The sign boards may fall down for a strong wind. They don't draw attention of the drivers. Sometimes they are covered by over grown tree branches.

C. Sensors

IR sensor and ultrasonic sensors are used which is sensitive to weather condition, ambient light and material on which their signal is hitting .Receiving information from the Ultrasonic transceiver, and accordingly transmit the data via the Wi-Fi router to the controller.

III. OBJECTIVES

Decreasing accident rates in hairpin bend. Safeguarding trespassing animals at hairpin bends. And helping vehicles to take safe turn there. Aimed at increasing efficiency in reducing accident rates.

Our solution proposes a prototype which senses the image and detects the object in the background image using MATLAB and it produces signal in traffic surveillance system. The main objective is to apply this project at hairpin bends in hill areas.

IV.A. FUNCTIONAL BLOCK DIAGRAM

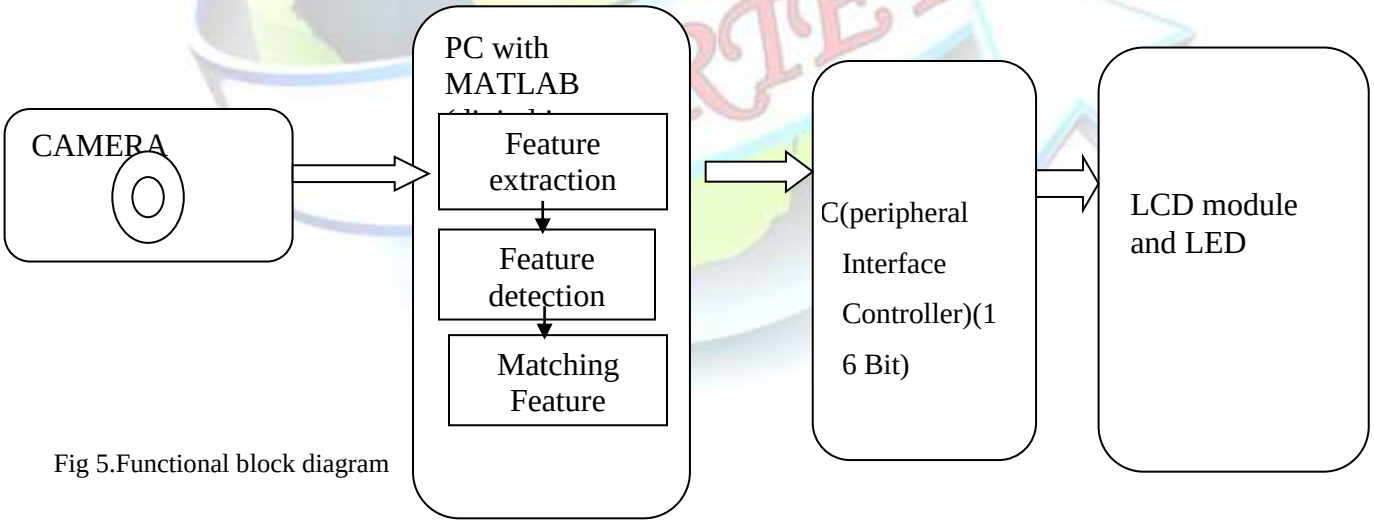

Fig 5.Functional block diagram

IV.B.FUNTIONAL BLOCK DIAGRAM DESCRIPTION

Camera in the laptop captures image from the live video (IMAGE ACQUISITION).In MATLAB feature extraction and matching technique will be done .The model then references those features while analysing and classifying new objects. Through serial communication the data is transferred to pic .If the features of input image matches with the created model the name of the object will be diplayed in the LCD and the LED indicates accordingly.

ISSN 2394-3777 (Print)
ISSN 2394-3785 (Online)
Available online at www.ijartet.com

International Journal of Advanced Research Trends in Engineering and Technology (IJARTET) Vol. 7, Issue 7, July 2020

IV. System Design

In HARDWARE design PIC (Peripheral Interface Controller), LCD module are used. SOFTWARE design MAT LAB and MP lab is used.

A. **Hardware design**

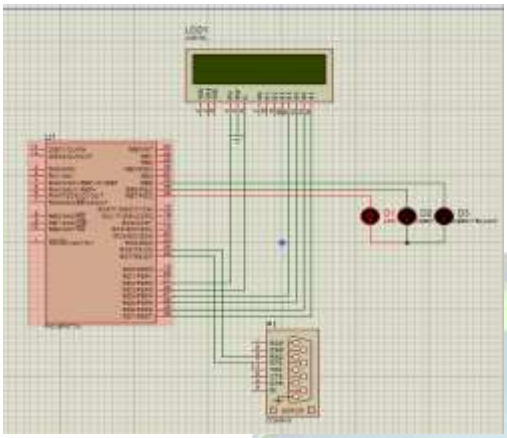

Fig 6.Diagram of hardware design

V. Hardware Description

PIC 16F877A is used which is a 16 bit microcontroller with 40 pins. The connection between the computer and PIC is through a 9 pin serial communication port (RS232).The 25th pin (RC6/TX/clk) and 26th pin (RC7/Rx/DT) of PIC and 2nd&3rd pin of RS232 is connected transmitting and receiving data. The 3 colour LEDs are connected to 38(RB5), 39(RB6) and 40th pin (RB7).The size of LCD used is 16x2 which is connected between pin no 21-30.

B. Software design

Flowchart and Description

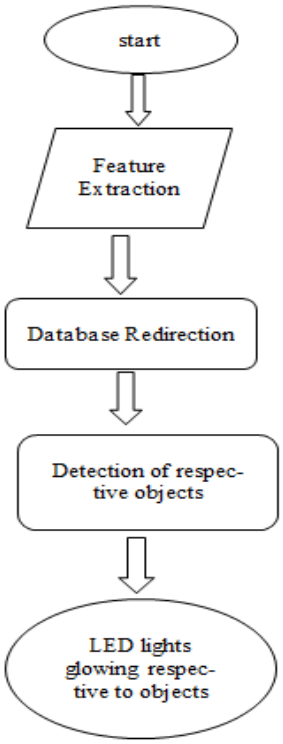

Fig 8.Output

VI. Result And Conclusion

Thus the proposed system avoids accidents at the hairpin curves efficiently. Reduces confusion and inappropriate movement of the vehicles. Traffic density will be under control.

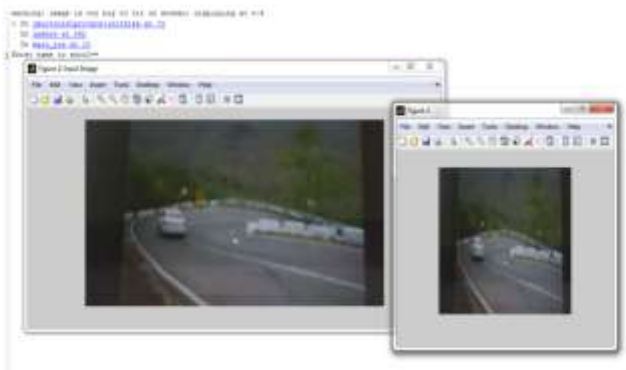

Fig 7.Output

References

[1]. www.ijser.org › research paper › SMART-TRANSPORT-SYSTEM-SI.

[2]. https://ijret.org/volumes/2016v05/i08/IJRET20160508020.pdf

[3]. Dhanapal, R., & Visalakshi, P. (2015). Efficient Clustering protocol based on Ant-Bee agent for Large Scale MANET. International Journal of Applied Engineering Research, 10(52), 2015.

[4]. Mathew, O. Cyril, R. Dhanapal, P. Visalakshi, K. G. Parthiban, and S. Karthik. "Distributed Security Model for Remote Healthcare (DSM-RH) Services in Internet of Things Environment." Journal of Medical Imaging and Health Informatics 10, no. 1 (2020): 185-193.

[5]. Dhanapal, R., & Visalakshi, P. (2016). Real time health care monitoring system for driver community using ADHOC sensor network. Journal of Medical Imaging and Health Informatics, 6(3), 811-815.

ISSN 2394-3777 (Print)
ISSN 2394-3785 (Online)
Available online at www.ijartet.com

International Journal of Advanced Research Trends in Engineering and Technology (IJARTET)
Vol. 7, Issue 7, July 2020

[6]. Yuvaraj, N., G. Saravanan, R. Dhanapal, and M. Premkumar. "Towards Efficient Data Transmission using Energy-based Clustering Model (ECM-EDT) in Heterogeneous VANET." (2020).

[7]. Dhanapal, R., T. Akila, Syed Shuja Hussain, and Dinesh Mavaluru. "A Cost-Aware Method for Tasks Allocation on the Internet of Things by Grouping the Submitted Tasks." Journal of Internet Technology 20, no. 7 (2019): 2055-2062.

[8]. Parthiban, K. G., S. Vijayachitra, and R. Dhanapal. "Hybrid Dragonfly Optimization-Based Artificial Neural Network for the Recognition of Epilepsy." International Journal of Computational Intelligence Systems 12, no. 2 (2019): 1261-1269.

[9]. Dhanapal, R., and P. Visalakshi. "A Sector Based Energy Efficient Adaptive Routing Protocol for Large Scale MANET." Research Journal of Applied Sciences, Engineering and Technology 9, no. 7 (2015): 478-484.

[10]. Data, Energy Efficient Privacy-Preserving Big. "MCEEP-BDA: Multilevel Clustering Based-Energy Efficient Privacy-Preserving Big Data Aggregation in Large-Scale Wsn."