PREVENTION OF WILD ANIMALS FROM ACCIDENTS USING IMAGE DETECTION AND EDGE ALGORITHM

Mr.A. ANANDHA RAJA[1], Ms.K. RAMYA[2], Ms.B. KOUSALYA[3], Mr.S. JEEVA[4]

[1]Assistant Professor, Department of ECE, SNS College of technology, Coimbatore, Tamilnadu, India.
[2, 3, 4]student, Department of ECE, SNS college of technology, Coimbatore, Tamilnadu, India.

Abstract:- *The environmental impact of roads is of increasing international interest and concern. The impacts of roads include habitat loss, habitat fragmentation and habitat degradation that affect wildlife and its habitats both directly and indirectly especially on larger mammals like Bengal tiger, Indian elephant, Giraffe. These animals have large ranges or undertake seasonal movements over large areas of mainly natural or semi-natural habitat. There has been less attention overall to animals in more modified landscapes with a long history of intensive land use and land management. On the positive side, the road is the most beneficial thing for the mankind, without which globalization is very hard to achieve. Wildlife protection and conservation is a challenging one, especially in natural reserves, hot spots near human environment (i.e., roads, railways, and other civil infrastructures). This project proposes image processing based system for wildlife management in the surrounding area of human passages to establish safe ways for animals to cross transportation infrastructures such as road.*

Key words*: (MATLAB) matrix laboratory, (PIR) passive infrared , (IR) infrared, (PIC) programmable intelligent computer, (LCD) liquid crystal display.*

1. INTRODUCTION

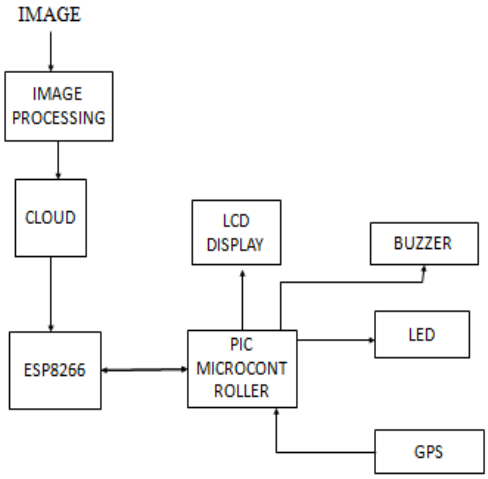
In India, there are many highways and roads that run across protected wildlife areas, for example mudumalai wildlife sanctuary in Tamil nadu. In places like that it is inevitable that the wild animals will enter the highways. This often leads to fatal accidents to both animals and human life. Till now there are no proper systems to prevent these losses. The main aim of the project is at developing a system to prevent accidents like these and large wild animals are detected near the human-animal environment overlap to avoid fatal accidents. The actual system is to prevent the man animal conflict that seen across the world. These kinds of conflicts leads to fatal accidents for both the wildlife and human life. The proposed method is to prevent the conflict by using MATLAB analysis.

2. EXISTING SYSTEM

In the existing system the PIR sensor is used on the roadside to detect the movement of the animal by the infrared light radiating from the object. Boundary walls and solar fences around the sensitive areas are built to prevent the wild animal attacks. But this system doesn't allow the animals to have a large living range and in-dependence of movement. The various systems are being used by the research institutions to monitor the movement of lions, tigers, elephants, olive turtles, and other wild animals to understand their movements and their use pattern of the habitat. The major drawback of IR sensor is it not only detects the wild animals but also detects the movement of small birds and even human being. The installation of the system becomes difficult as it is of high cost and is not always possible.

3. PROPOSED SYSTEM:

The proposed system is based on using detector circuit on both sides of roads to detect the movement of wild animals while crossing the road. The animal is detected using image detection circuit. The project mainly focuses on avoiding accidents causing harm to animals and concentrate to avoid the animal vehicle crashes along the roadsides. The captured image is processed in image processing technique were edge algorithm is used to identify the height and shape of the structure to find whether it is an animal.



Block diagram-1: Proposed block diagram

3.1 WORKING

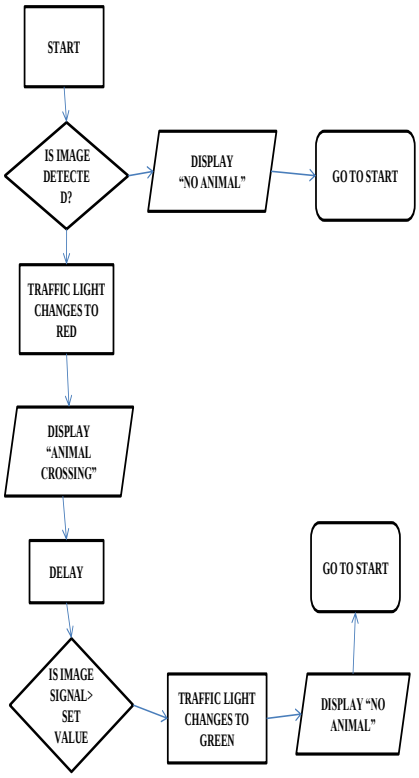
For the implementation of the project, a module on the exterior of the road and another module along the traffic signal. The module at the roadside has a camera, which is used to capture image of animal on the roadside.

3.2 BLOCK DIAGRAM

The image is captured using the camera placed on the roadsides. The captured image is processed on the MATLAB. It detects the animal and identifies the type of animal using edge detection algorithm. Then the information is stored in the cloud server for the authority to verify. The PIC microcontroller is used to process the

coding and displays whether the animal is present or not. If the animal is present, then the alarm is given, even after the alarm if the animal did not move then the traffic signal gets the red light. The vehicle passing through that road will tend to stop until the animal passes. The GPS present in the system is used to locate the exact location of the animal.

The below flow diagram explains the flow of the system.



Flow chart-1: Working

3.3 PRACTICAL CONSTRAINTS

To extend the system over the range of traffic light, multiple detection devices has to be placed along the roadside. The MATLAB program is used to process the image captured by the camera. The detectors placed on the roadside sends the image and the image detection and the edge algorithm process the image and give the result.

3.4 SIMULATION RESULTS

The simulation results is mentioned in the fig 3.

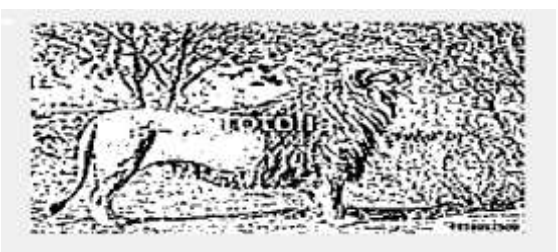


Fig-1: Simulation Results

4. CONCLUSION

The extent of the subject lies in conserving wildlife and also avoiding accidents causing harm to human and animals. The advantages of our systems are design of low cost, large scale effective system to avoid the accidents caused by animals and also preserve wild life. The project mainly concentrates to avoid the animal vehicle crashes along the roads crossing the wildlife sanctuaries or forest. The system consists of low cost cameras deployed along the road side. The design of camera and programming of the processor are explained in this paper. Also the deployment of detection device and performance of the project is tested using MATLAB simulation software.

REFERENCES

[1]. Prof.Latha venkatesan, S.Omar Farooq, J.Naveen Kumar, "Animal And Vehicle Collision Avoidance Using Wireless Sensor Actuator Network" in ISSN 2229-5518, May 2013.

[2]. Davide Adami, Fabio Vignoli Natech Srl, "Iot Solutions For Crop Protection Against Wild Animal Attacks"

[3]. S.R.Mohana sundaram, D.Dane , "Prevention And Monitoring Of Wildlife By Using Wireless Networks" in ISSN 2395-4396.

[4]. D.Shah, Sharma, "Practical Detection Of Animal And Collision Avoidance System Using Computer Vision Technique" IEEE 2017.

[5]. Miss Daxini Nidhi Prakashbha, Miss Thaker Jil, Chirag-2015 "Image Processing Algorithms For Animal Detection For Highway Security"

[6]. G. Tuna, T. V. Mumcu, K. Gulez, V. C. Gungor, and H. Erturk, July 2012"Unmanned Aerial Vehicle-Aided Wireless Sensor Network Deployment System For Post-Disaster Monitoring, vol. 304, pp. 298–305.

[7]. A. Mainwaring, D. Culler, J. Polastre, R. Szewczyk, and J. Anderson, September 2002, "Wireless Sensor Networks For Habitat Monitoring," in Proc. of ACM WSNA'02 Workshop, , pp. 88–97.

[8]. Dargie, W. and Poellabauer, C., "Fundamentals Of Wireless Sensor Networks: Theory And Practice"

[9]. Luis obrega, andre tavares, Antonio Cardoso, pedro goncalves, IEEE 2018, "Animal Monitoring Based On Iot Technologies"