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PATTERN RECOGNITON OF OCCURRENCES WITH ANIMALIUM

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Abstract - Over 1 million cars, motorcycles and lorries collide with animals on our roads every year, costing the country £12 million annually. It is the objective of this project to develop a system that recognizes special pattern and animals. The project will develop a detection system that recognizes animals and signals them via lights installed on direction boards and poles. In our project, we develop a system using image processing to detect wildlife on the road, in forest areas, along highways, near farms, etc. (using Pattern Recognition) and provide an alert to vehicles via roadside direction boards and poles. We will use a pattern recognition module to recognize the special type of pattern that appears on the bushes as the animal crosses the field. Whenever an animal passes through bushes, only those bushes will show movement. Once the pattern is identified, it will begin red blinking lights to alert drivers. As a result of this study, it will be possible to safeguard human habitation as well as animals by making the relevant personnel more responsive to animal intrusion through the use of the intelligent video surveillance system.

Key Words: Patten Recognition, Image Processing, Animal Detection.

1. INTRODUCTION

Automated pattern recognition uses patterns and regularities in data to recognize trends, patterns, and regularities. It's used in areas such as statistical data analysis, signal processing, image analysis, information retrieval, machine learning and others. Computer algorithms are used to find patterns in data automatically and to use these patterns to do things such as classifying them into categories. It is the objective of this project to develop a system that recognizes special patterns and animals. The project will develop a detection system that recognizes animals and signals them via lights installed on direction boards and poles. In our project, we develop a system using image processing to detect wildlife on the road, in forest areas, along highways, near farms, etc. (using Pattern Recognition) and provide an alert to vehicles via roadside direction boards and pole. The movement of wildlife will be detected by motion detection. Motion can be detected by monitoring changes like change in passive and active sensors. Movement detection refers to the detection of a change in an object's position in relation to its surroundings or a change in surroundings in relation to an object..Nowadays, road accidents occur due to the sudden interference of animals. To avoid such a situation we are detecting the animals approaching the roads from roadside forest/bushes and red blinking lights will give alert to drivers. However, the animals coming from bushes will follow a particular pattern that willbe detected using pattern recognition. The red blinking lights present on the direction boards will alert drivers or the person coming from the other side. After receiving the signals from the boards driver will decrease the speed of their vehicle. This has subsequently led to a demand for a real time surveillance system that detects the entry of those animals and notify the concerned authorities. As a result of this study, it will be possible to safeguard human habitation as well as animals by making the relevant personnel more responsive to animal intrusion through the use of the intelligent video surveillance system.

2. LITERATURE REVIEW:

Related Work:

In [1], I. Haritaoglu, D. Harwood, L.S. Davis have proposed that W/sup 4/ is a real time visual surveillance system for detecting and tracking multiple people and monitoring their activities in an outdoor environment. It operates on monocular gray-scale video imagery, or on video imagery from an infrared camera. W/sup 4/ employs a combination of shape analysis and tracking to locate people and their parts (head, hands, feet, torso) and to create models of people's appearance so that they can be tracked through interactions such as occlusions. It can determine whether a

foreground region contains multiple people and can segment the region into its constituent people and track them. W/sup 4/ can also determine whether people are carrying objects, and can segment objects from their silhouettes, and construct appearance models for them so they can be identified in subsequent frames. W/sup 4/ can recognize events between people and objects, such as depositing an object, exchanging bags, or removing an object. It runs at 25 Hz for 320/spl times/240 resolution images on a 400 MHz dual-Pentium II PC.

In [2] , I.Sree. Nivasa Subhabrata Nandy, H.S.T.Murty, Dr. V.Malleswara Rao, they have analyzed the usual pixel-level approach. They developed an efficient adaptive algorithm system based on pixel comparison. Recursive comparison of pixel is used between the present frame and the reference frame. This algorithm is implemented using image processing in MatLAB Environment and they

work on making it a real-time applicable tool for various possible applications. Thus an attempt to build a video system for real-time detection and tracking of motion which has the ability to minimize both false detections and missed detections, interfaced with a hardware unit based on microcontroller, communicating serially with the computer system as a control unit panel prototype. It is capable of processing 320 times 240 video at 28 fps, excluding post processing.

In [3], R. Venkatesan,A. Balaji Ganesh told that this paper implements a method to track and recognize the object in a surveillance area. They analyze usual pixel-approach. Camera system (webcam) acts as a sensor to track the object in a surveillance area. Edge detection is an image segmentation process is implemented to have clear knowledge on real edges of real time video. Background separation algorithm provides clear knowledge about foreground and background. Video preprocessing such as frame separation, thresholding, binary operation, histogram equalization and edge detection of traffic video is done to track multiple objects and recognize it. Stepper motor may be used to orient the camera to any position to track and recognize object in surveillance. Contour let transform is used for feature extraction to recognize the object in a surveillance area and pattern matching also play an important role to recognize different objects in a video.

In [4], Sherlin.M.Youssef, Meer A..Hamza, ArigeF.Fayed , A new method for detecting and tracking multiple moving objects based on discrete wavelet transform and identifying the moving objects by their color and spatial information is proposed in this paper. Since discrete wavelet transform has a nice property that it can divide a frame into four different frequency bands without loss of the spatial information, it is adopted to solve this problem due to the fact that most of the fake motions in the background can be decomposed into the high frequency wavelet sub-band. In tracking multiple moving objects, many applications have problems when objects pass across each other. In this paper, they have developed robust routines for detecting and tracking multiple moving objects with occlusion. The proposed model has proved to be robust in various environments (including indoor and outdoor scenes) and different types of background scenes.

The experimental results prove the feasibility of the proposed method. Experiments on real scenes show that the algorithm is effective for object detection and tracking.

In [5], The book by David Kuncicky, told some concepts and algorithms of MATLAB such as matrices,its indexing, resizing and reshaping, shifting and sorting, MATLAB data types, Data Structure, functions etc.

Comparative Study of above Existing Articles:

Author: I. Haritaoglu, D. Harwood, L.S. Davis

By approaching real time visual surveillance system for detecting and tracking multiple people and monitoring their activities in an outdoor environment.

Author: I.Sree. Nivasa Subhabrata Nandy, H.S.T.Murty, Dr. V.Malleswara Rao

By approaching Recursive comparison of pixel is used between the present frame and the reference frame. This algorithm is implemented using image processing in MatLAB Environment.

Author: R. Venkatesan,A. Balaji Ganesh

By approaching Edge detection is used for feature extraction to recognize the object in a surveillance area and pattern matching also play an important role to recognize different objects in a video.

Author: Sherlin.M.Youssef, Meer A..Hamza, ArigeF.Fayed

By approaching new method for detecting and tracking multiple moving objects based on discrete wavelet transform and identifying the moving objects by their color and spatial information.

Author: David Kuncicky

By approaching his book we have clear knowledge about concepts and algorithms of MATLAB such as matrices,its indexing, resizing and reshaping, shifting and sorting, MATLAB data types, Data Structure, functions etc.

3. ADVANTAGES

- Prevent road accidents
- Prevent human habitation
- Save Wildlife

4. CONCLUSIONS

The main causes of road accidents are related to driving. So, we can develop a system, which helps the driver, it can help reduce the number of accidents and this is the research we are focused on the Pattern recognition system for road safety. The subject extends to conserve wildlife and also avoids accidents causing harm to human and animal's life. The main advantages of our systems is design of low cost, large scale effective system to avoid the accidents caused by animals and also preserve wild life. Use intelligent video surveillance to protect habitation and animals by making personnel more aware of animal intrusions. The project focuses on avoiding the animal vehicle crashes along the roads crossing the wildlife sanctuaries or forest. The low cost cameras are deployed in this system along the road side. We use image processing technique to identify the animal and the distance in which it is located according to which the brakes are applied.

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