Relative Study of Animal Tracking and its Detection

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Abstract :As human race is growing, wildlife is in danger and on the other hand animals are also harmed during animal attacks.But as per natures rule, every living creature on this earth is important and has important role in ecosystem.Therefore it is our duty to protect both the living creatures. This review paper give a comparative study of animal tracking to be done in residential area so that the harm caused to both the living beings can be avoided. Animal detection will be the main purpose to reduce any kind of harm.

Keywords: human race, animal attacks, important role in ecosystem, animal tracking, detection.

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1. INTRODUCTION:

In recent days, we hear news of animal attacks on the human life. Attacks occur due to the decrease in the forest areas.Even animals don't find their appropriate shelter as now-a-days their forest are rapidly converting into concrete world.In the search of food and shelter they are forced to enter the human world. In this way, wild animals consider humans as their food which unfortunately results in deadly attacks on humans. There is possibility that humans can cause harm to the innocent creatures during attacks. Being an intelligent living creature among them, it is our responsibility to protect both of them from each other.

According to environment ministry, around 1,144 people were killed in attacks across India. These numbers are increasing day by day and there is need of putting an end towards this crisis. Therefore, this comparative study involves detection of animals and tracking in the human residential premises.

SECTION I

Tilo Burghardt [1] suggested a method to track wildlife animal's footage. This method uses a set of Haar-like features in AdaBoost classifier algorithm. Tracking is implemented using the Kanade-Lucas-Tomasi tracker. The high-level information such as presence of animal family is exploited to semantically to comment on the footage of animals. This method mainly focuses on particular instance.

Antonio-Javier Garcia-Sanchez[2] proposed system provides users with additional information to analyze animal reactions to different environmental conditions. This paper specifies a Wireless Sensor Network (WSN) based system which is a costand power efficient technology. It studies the animal behavior in crucial areas. Two different hardware prototypes are used such as camera nodes and detector nodes for moving target monitoring.

Nidhi Daxini,Sachin Sharma [3] paper has been presented by using Open CV software for feature extraction. Open C is a library for programming functions. This method has a main focus on real time processing of images. The function of whole system is to first capture image, create a database, feature extraction by using Haar-like features and training them, final step is testing.The region of interest (ROI) is found which specifies our animal.

Ms. Jui Deshmukh et al [4] project uses a special type of filter named from after Gabor, i.e. Gabor Filter used for object recognition and detection. In the spatial domain, a 2D Gabor filter is a Gaussian kernel function modulated by a sinusoidal plane wave. The filter has a real and an imaginary component represented in orthogonal directions.The Fourier transform of Gabor filter is the convolution of Fourier transform of harmonic and Gaussian filter. Software mainly used is Matlab which is easy available from institutions which males implementations simpler. KNN classifier is used for object recognition.

Kshama s.Bhise[5] proposed a system to track location animal using RFID(Radio Frequency Identification Device) and GSM(Global System Mobile) modems.To achieve target of project three main functions where undertaken,system design of a wildlife tracking network, in the formulation of a network management protocol and in the proposal of a uniform distance sampling based approach to GPS tracking.As there is no line-of-sight required, tag placement is less restricted; RFID tags have a longer read range.

Patrick E. Clarket al [6]Clark's systemincludes GPS-based tracking collars and a hand-held, mobile base station. There arebasic components included, they are:a 16-channelGPS receiver, a single-board computer with a memory-card slot (CompactFlash), and a radio transceiver.The spread-spectrum radio transceiver in the Clark ATScollar has several advantages over track systems using GSMcellular telephone. Clark's collars are capable of transmitting GPS location data packetsover 24 km far away.Real-time GPS tracking systemprovide a time and cost savings to researchers seekingto relocate a taggedanimal for direct observation.

V. Sangeethaet al. [7] proposed system is a animal detection system using temperature sensor and PIR sensor based on Internet of things (IOT). Entire process of the system is encountered by using two main functions:

1. Sensing part
2. Monitoring part.

Temperature sensor continuously does the work of comparing temperature changes between previous and recent time duration. PIR sensor performs respective operations after detecting any motion. Sensitivity range is up to 20feet (6meters)

SECTION II

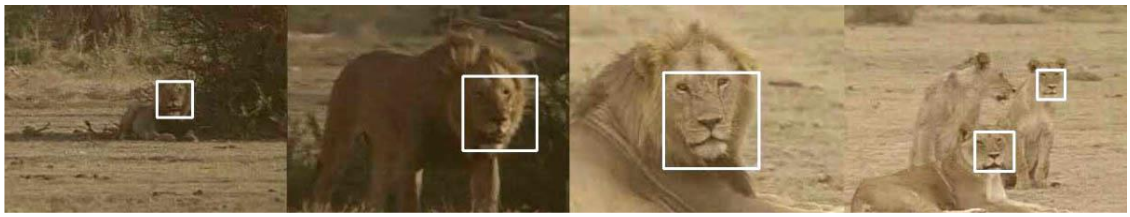

Figure 1: Images show face detection and tracking of lion in various direction and different areas.

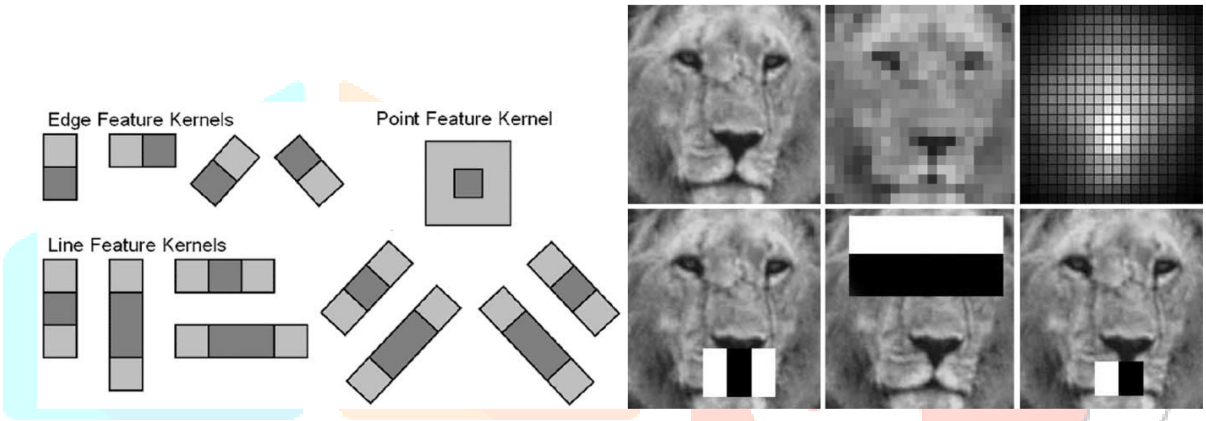

Figure 2: Types of Haar-like Feature Kernels are shown in figure above. These kernels are applied on lion's image.

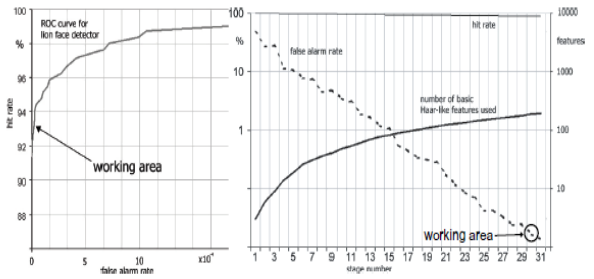

Figure 3: (left) ROC curve for face training of lion using 680 positiveimages and 1000 negative images; (right) Outline of the number ofnecessary single Haar-like features used for achievingreduction [1].

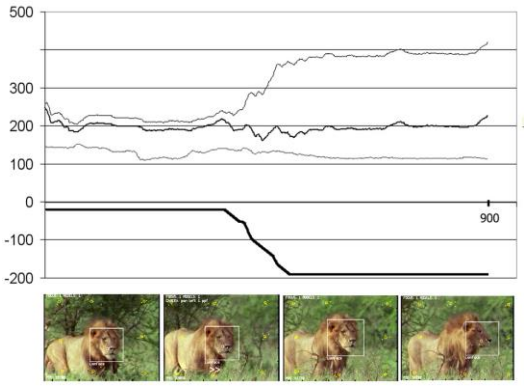

Figure 4: Post-labeling using a Confidence Parameter (TTL-Curve):1st occurrence of the lion face (object birth) as well as object disappearance(object death) is confirmed [1].

CONCLUSION

The purpose of this paper was to get detail study of various methods to detect an animal any area using thermal sensors, motion sensor, and image processing using software. The final result from this paper is to give a clear idea of animal detection and tracking in various methods which would be effective to use while creating a system of maximum efficiency. Large amount of algorithms are used in factorizing any system, but these above stated are more than sufficient to perform any operation on image.

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