A Survey of the Farm Surveillance System for Animal Detection in Image Processing

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***Abstract*—intelligent farm surveillance system for animal detection refers to video level processing techniques for recognition of object from farms video. So Many countries are using intelligent farm surveillance system to take care of the farm remotely from anywhere. In this paper we have studied various types of techniques proposed by different researchers and summarized all the results. This Paper is based on essential perceptive of the segmenting algorithms and analyzing algorithms for color image segmentation and detection.**

***Key Terms:* Smart Surveillance System, Video Object Segmentation, Static Background, Background Subtraction, Background Image Generation and Background Updation**

I. INTRODUCTION

Image processing is a technique to convert an image into digital form and to execute some operation on it, in order to get an improved image or to take out some useful information from it. It is a type of signal dispensation in which input is image, like video frame or snap and output may be image or individuality associated with that image. Image processing system includes taking images as two dimensional signals while applying previously set signal processing techniques to them. It is amongst quickly growing technologies these days, with its applications in a variety of aspects of a business. Image Processing forms core research area within engineering and computer science disciplines too.

Intelligent Video Surveillance systems deal with the real-time reviewing of determined and passing objects within a definite location [1]. The main intend of this system is to present an automatic interpretation of scenes and to realize and predict the actions and relations of the observed objects on the basis of the information acquired by video camera. Intelligent word adds the cleverness to the video surveillance system. Conventional system needed someone who can view the system consistently but with the help of Intelligence video surveillance it is possible to do these things automatically.

II. INTELLIGENT VIDEO SURVEILLANCE SYSTEM

In IVS, there are six components. These components are listed below.

A. ***Acquisition***

This component is essentially used for acquiring the images. There is a complete array of camera models so that we can meet different reviewing needs. They are analogue and digital, and can be power-operated or not. Solar cameras can also be used in many applications.

B. ***Transmission***

The video captured by surveillance cameras must be sent to the recording, processing and viewing systems. We can do this transmission by cable (fiber optic or coaxial cables or copper wire) or by air (infrared signals).

C. ***Compression***

Digitized video represents a huge amount of data to be transmitted and archived. So that, we must have to compress surveillance video using codec, algorithms to reduce the amount of data by deleting repetition , by image or between footage frames, as well as details that cannot be seen by a human eye.

D. ***Processing***

Video management systems process video surveillance images, such as managing different video flow, and screening, recording, analyzing and searching recorded footage. There are four major types of video management systems, Digital Video Recorder (DVR), Hybrid Digital Video Recorder (HDVR), Network Video Recorder (NVR), IP video surveillance software.

E. ***Archiving***

The video footage archiving time varies depending on observation needs, ranging from few days to few years. There are two types of archiving strategy, internal and attached.

F. ***Display***

Video surveillance can be viewed on different devices. In small facilities, the video can be viewed directly on the recorder, as the image is to be recorded. Images are generally viewed distantly on computer or on a mobile device such as a telephone.

Next Figure shows the working of IVS.

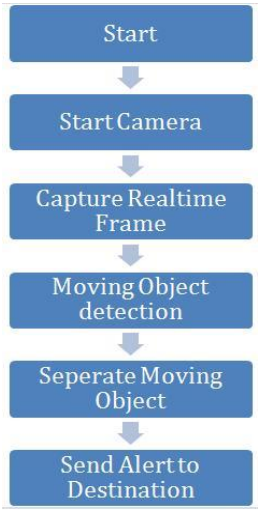

Fig. 1 Working of IVS

II. Related Work

Marcus Baum, Florian Faion, and Uwe D. Hanebeck implemented an experimental set-up to track the ground moving movable object from a bird's eye view. In this research, an RGB and depth camera is used to detect all the moving points. The detected points supply as input for a probabilistic extended object tracking algorithm that at the same time estimates the kinematic parameters and the shape parameters of the object. By these resources it is easy to differentiate moving objects from the background and the probabilistic tracking algorithm ensures strong and soft shape estimation. They provided an experimental evaluation of a recent Bayesian extended object tracking algorithm based on a supposed Random Hyper surface Model and give a assessment with active contour models.[2]

Zhang Xiaoyan, Liu Lingxia, Zhuang Xuchun implemented a new scheme for performing automatic video object segmentation. First they proposed a new adaptive and reliable threshold estimation method for the change detection process. Secondly the early edge model of the video object is obtained on the basis of the adaptive change detection and canny edge detection. Thirdly the edge model has been tracked and updated in every frame to accommodate rotation and changes in shape of the tracked object and then the outer contour of the video object is determined based on the mathematical morphological operation. Lastly, an improved active contour which uses the gradient vector as the external force is applied to guide the initial outer contour moving to the actual video object contour. Experiment results show that the proposed algorithm is strong to the entire motion and local twist of object adaptable to the complex background and can get the closed and accurate video object contour.[3]

Wei Huang and Q. M. Jonathan Wu presented a new algorithm for detecting and tracking multiple moving objects in both outdoor and indoor environments. The proposed method dealings with the change of a combined color-texture feature vector in each image block to detect moving objects. The texture feature is extracted from DCT frequency domain. An attributed relational graph that is ARG is used to represent each object in which vertices are associated to objects sub-regions and edges represent spatial relations among them. Multiple cues including color, texture, and spatial position are incorporated to describe each object's sub-regions. Object tracking and identification are accomplished by inaccurate graph matching which enables us to track partially occluded objects and to deal with object articulation. An ARG adaptation scheme is integrated into the system to handle the changes in object scale and appearance. The experimental results prove the efficiency of the proposed method. [4]

Hannah M. Dee, Sergio A. Velastin presented an overview of behavior analysis and event detection systems within computer visualization for surveillance with an importance on the ways in which we can decide the strength of the systems and on the interface among real-world surveillance installations and cutting-edge research. This field is growing quickly and catching up with conservative engineering and other scientific discipline. This is something that can't be overlooked given the immediate applicability of this area and we disagree that the accurate characterization of performance will assist really in this aim. [5]

As per **Guo Lihua** the video object segmentation is the main section of digital video representation, transmission and manipulation. For example, application including content based video retrieval, object-based video coding and many more. In this paper he proposed the fast and automatic video segmentation method with the aim at foreground and background segmentation through efficient mixture of color and motion analysis module. He started with the watershed segmentation algorithm to provide initial regions as per the pixels luminance gradient then, regions are merged according to their color and motion connection. Finally, the semantic video article will be obtained after post processes. Advantage of this method is its fast and regular execution of video object segmentation. [6]

III. Conclusion

In this paper, we surveyed different methods modified by various researchers and scholars for object Detection in Image Processing. They used various techniques and methodologies in order to achieve enhancements in detection methods of image processing.

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