Human Detection by Surveillance Camera

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ABSTRACT

Security problems and decreasing costs, leads to the rapid development of video surveillance systems. It is necessary to implement analytical tools capable of identifying objects that may appear in the video sequence. The work presented in this article consists of designing a video surveillance system for the automatic detection of humans in a video sequence acquired by a fixed camera. The principle of this work is based on the modeling and subtraction of the background. In order to determine the nature of the objects, the authors make the detection of the contours of the foreground image, then by matching this contour with the images of a base, silhouette images of people in different positions. The acquisition of the frames is carried out in real time, the matching of the images takes a considerable time and this time becomes increasingly longer based on the size of the base. To solve this problem, the authors have used the parallelism.

KEYWORDS

Contours, Detection, Matching, Real Time, Video Surveillance

INTRODUCTION

With the development of science and technology, video surveillance systems are increasingly being sought in the various fields of application, especially in the fields of detection and safety. These video surveillance systems require a surveillance camera to monitor people and objects and recently for facial biometry. To ensure global security, several applications have been developed, but this area is still under development. Among the applications found in this field, the detection of human presence in real time which is a very active subject in recent years.

The application we propose focuses on the systems of video surveillance which enable to perform the detection of human presence in a video sequence acquired by a fixed camera.

Our proposition deals with detection of human presence in real time during video surveillance. We need to report the human presence and ignore other detected objects. To perform this detection, we have to recognize the shape of a human silhouette. The solution of this problem is a difficult challenge. Human silhouette has many forms: standing, sitting, squatting, hands raised, walking, etc.

This paper is organised as follow: section 2 presents an overview on the video surveillance and motion detection. Section 3 talks about the recognition of human. The 4th section presents the

proposed approach and the 5th one presents the evaluation and experiments. Finally, a conclusion in the last section.

VIDEO SURVEILLANCE AND MOTION DETECTION

Surveillance cameras can be an effective technique for protecting public safety and detecting or discouraging criminal activity. The analysis of human behaviour since the video attracts the interest of a large number of researchers despite the fact that the problems are diverse and varied. Most approaches in the literature estimate the movement as low-level information (Sarah & Mahfoud, 2016).

Motion detection is usually a control algorithm that helps the surveillance camera to choose when to start capturing the detected event.

Video surveillance becomes a fundamental component of our society as was the case for the mobile phone. Insecurity is also the new element in this need to monitor, statistics prove it.

Video surveillance is a system of cameras arranged in a space to be monitored. These cameras are connected to a computer system which allows the processing and analysis of the received data. Data analysis and integration are increasingly automated and require less human intervention.

Video surveillance is a system that automatically detects the movement of an object. It also allows following this object, it is based on the notion of the dissimilarity between neighbor frames of a video stream. It also exploits the properties of the object like: size, position and speed (Le, 2009; Teresa, 2016).

The Design of a Video Surveillance System

The motion detection step plays a very important role in the video surveillance system because the result of this step will influence all the following steps. Figure 1 shows the general architecture of a video surveillance system.

Detection of Human Presence

We all have a common morphology, although we are all different. We all have two arms, two legs, one head, etc. which implies that a human silhouette can be differentiated from a silhouette of an animal for example.

Human detection involves segmenting moving regions.

Figure 1. General architecture of a video surveillance system
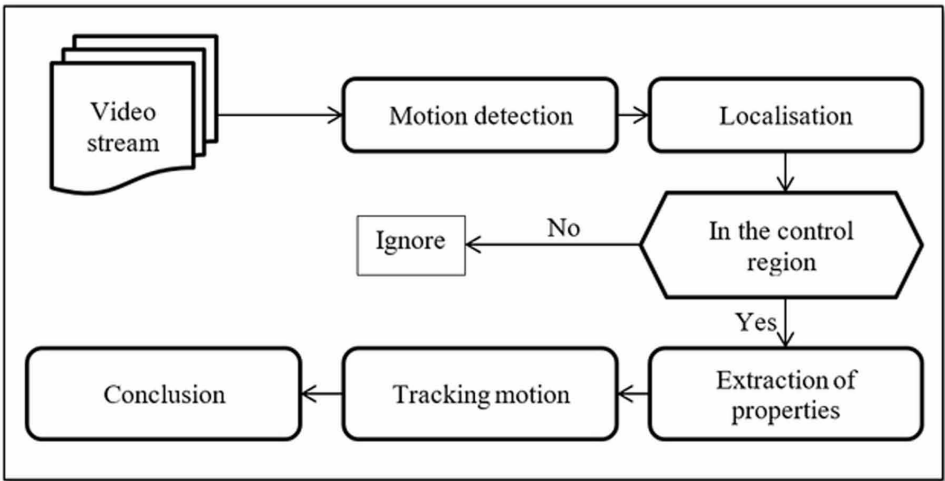
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