MULTI-CAMERA TRACKING SYSTEM FOR HUMAN MOTIONS IN DIFFERENT AREAS AND SITUATIONS

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ABSTRACT. *The aim of this study is to construct a multi-camera tracking system to recognize a human motion beyond several video cameras in different areas and situations. Using a multi-camera tracking system the real-time processing is one of the most important issues to be considered. As we know, using multiple cameras the system will record a huge volume of video data. Therefore, we need a system that is able to track quickly the location of a human motion in every frame under minimizing processing time. The detail outcome and result from experiments of the method are discussed in this paper.*
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1. **Introduction.** Video tracking can be defined an action to estimate the trajectory of an object in the image plane as it moves around a scene. In other words, a tracker assigns consistent labels to the tracked objects in different frames of a video.

At the early stage of tracking systems, a lot of researchers focused on tracking an object movement in an indoor environment [1, 2]. Basically, tracking a human motion in an indoor environment is easier than in an outdoor environment. This is because, the indoor environment has other features such as polygons, lines or other line structures in the background that can be used for simplifying the process of recognition [2, 3]. Besides that, the curved contour or shape of a human can reduce a possibility of mismatching the object with the background [2].

However, because of demands from society, tracking systems are widely used for outdoor environmental activities [4, 5]. This situation is so different from tracking object motions in the indoor environment. In an outdoor environment, tracking an object motion is a problem with how to deal with a background itself. The background of a moving picture should be different regarding situations and places even though data are taken in the same period. Besides that, the color, pattern or shape of a background sometimes resembles the shape, color or pattern of an object that we need to track.

On the other hand, the tracking system still has many open problems to be solved such as depth information for tracking. In order to detect an unsafe situation, it is required to recognize a natural situation, environment or human and vehicle behaviors in a whole time-length and in a spatial universe such as provide views taken by a cameras scattered and placed in various positions or from various angles in buildings, campuses, airports, stations, streets, highways, or towns for tracing environments, vehicles and humans.

Therefore, to solve that problem, nowadays most new research activities in a tracking system are exploring larger dimension for tracking systems [6]. As we know, many cameras are employed in a distributed video surveillance system to view, watch and recognize