REAL TIME TRACKING AND IDENTIFICATION OF MOVING PERSONS BY USING A CAMERA IN OUTDOOR ENVIRONMENT

BUDI SUGANDI, HYOUNGSEOP KIM, JOO KOOI TAN AND SEIJI ISHIKAWA

Graduate School of Engineering
Kyushu Institute of Technology
1-1 Sensui, Tobata, Kitakyushu 804-8550, Japan
kim@cntl.kyutech.ac.jp

ABSTRACT. *A new method for detecting and tracking of moving persons based on low resolution image employing peripheral increment sign correlation image and identifying the moving persons by their color and spatial information is proposed in this paper. Many tracking algorithms have better performance under a static background in indoor environment. It is, however, most of the tracking algorithms are applied in outdoor environment with noisy background instead of indoor environment. Since a low resolution image has a property that it can remove the small size pixels, it is adopted to solve the problem of the noisy background. In the tracking of a target object, many applications have problem when object occlude each other. A block matching technique based on peripheral increment sign correlation image is utilized to solve this problem. The identification of a target object is performed using color and spatial information of the target object. The experimental results prove the feasibility and usefulness of the proposed method.*
Keywords: Person tracking, Person identification, Block matching technique, Peripheral increment sign correlation image

1. **Introduction.** In recent years, with the latest technological advancements, visual surveillance and security system receive a great interest among many researchers. Until recently, video surveillance and security system was mainly a concern for military or large-scale companies. However, due to increasing crime rate, necessitates are taking better precautions in security-sensitive areas, like country borders, airports or government offices. Even individuals are seeking for personalized security systems to monitor their houses or other valuable assets. The vast amount of data acquired from video imagery should be analyzed by an intelligent and useful autonomous structure. This intelligent system should have the capacity to observe the surrounding environment and extract useful information for subsequent reasoning, like detecting and analyzing the activity, or identifying the objects entering the scene. Besides, monitoring should be done 24 hours a day, without any interruption. This sort of a system will achieve the security system task more accurately and effectively and saving a great amount of human effort.

Recently, various image processing methods for detecting and tracking of moving persons have been proposed in the past, such as, background subtraction, frame difference, optical flow and probability based approach. Liu *et al.* [1] proposed a background subtraction technique to detect the moving objects in an image by taking the difference between current and reference background image. It is extremely sensitive to the change in dynamic scenes derived from lighting and extraneous events etc. Lipton *et al.* [2] proposed a frame difference method that use of the differences between two or three successive frame images to extract the moving regions. This method is very adaptive to dynamic environment, but generally does a poor job of extracting all the relevant pixels, e.g., there may