Abstract

Video processing serves as a hidden treasure, rather a boon in disguise to surveillance system. The counting of people passing through a surveillance area is an important issue of this domain. It always relies on the process of background subtraction. The estimation of dynamic background model and the shadow removal are two main challenges of background subtraction. In this paper, a bi-directional people counting algorithm is proposed. To develop a robust counting system, Gaussian mixture model (GMM) is used to describe the background scene. But this algorithm does not provide a way to classify the shadows from the moving foreground objects. To achieve better performance, background model is upgraded by combining a Chromatic color model. This provides better improvement in moving objects detection by eliminating the shadows from foreground. A multi-class feature based tracking algorithm is applied for multiple tracking to handle occlusion problem. To improve the counting of individual in both directions a scheme is proposed, which is developed by a multi-level
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reverse tracking procedure. This proposed counting system seems to provide higher accuracy and better performance even under crowded situation and changing environmental situations. Experimental results show that high accuracy of bi-directional counting can be achieved if the density of the people access is low.

References

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**Index Terms**

Computer Science  
Software Engineering

**Keywords**

Video Surveillance  People Counting  Gaussian Mixture Model  Merge-split  Morphological Processing