Modified Codebook Algorithm with Kalman Filter for Foreground Segmentation in Video Sequences

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Background subtraction method is widely used in most of the video motion detection algorithms especially for video surveillance application. Background subtraction is used to extract moving or static foreground objects from the background scene. The efficiency of foreground-background segmentation heavily relies on background model which must be able to cope with changes in the scene and granularity of the foreground objects. The robust background model can produce good foreground segmentation results and it is still a great challenge to get accurate and high performance result today. In this paper, a video foreground-background segmentation approach is proposed. This approach is based on Codebook (CB) model with Kalman Filter. This approach can be used to extract foreground objects from the video stream. The Lab color space is used in this approach to calculate color difference between two pixels using CIEDE2000 color difference formula. Extracted foreground object from video sequence using this approach is useful for object detection in video surveillance applications. This approach has been tested with PETS and CDnet2014 datasets and segmentation results accuracy are evaluated compare with ground truth.