

Automatic change detection based on normal camera in indoor environment

Detection of moving objects from an image sequence in indoor environment is very important for activity recognition, and behavior understanding. Image difference is a widely used approach for detecting moving objects from static cameras. However, this approach is very sensitive to scene changes due to changes in lighting and movement of background objects.

To overcome the effect of deformation and minimize the impact of light and angle changes, in this paper, we have proposed a multi-scale fusion method for change detection. The developed method can be divided into 4 main blocks: firstly, pre-processing to conduct radiometric normalization and image registration based on SIFT algorithm, secondly, The wavelet transform is adopted to decompose the original images, thirdly, PCA method is used to get the initial change detection result of different scale images; finally Markov random field was applied to fuse the different scale change detection results. As the Markov random field consider the correlation between the neighbourhood pixels and the links of the different scale change detection results, the final fusion result is more accurate and practical, the testing results confirm the effectiveness of the proposed approach.

KEY WORDS: MRF, Change Detection, SIFT