

Dynamic Background Subtraction With Masked RPCA

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ABSTRACT

Robust principal component analysis(RPCA) has been proven effective in modeling the static background of videos. However, because a dynamic background cannot be represented by a low-rank matrix, measures additional to the RPCA are required. In this thesis, we propose masked RPCA to process backgrounds containing moving textures. First-order Markov random field is used to generate a mask that roughly labels moving objects and backgrounds. To estimate the background, the rank minimization process is then applied with the mask multiplied. During the iteration, the background rank increases as the object mask expands, and the weight of the rank constraint term decreases, which increases the accuracy of the background. We compared the proposed method with state-of-art, end-to-end non-deep learning methods to demonstrate its advantages.