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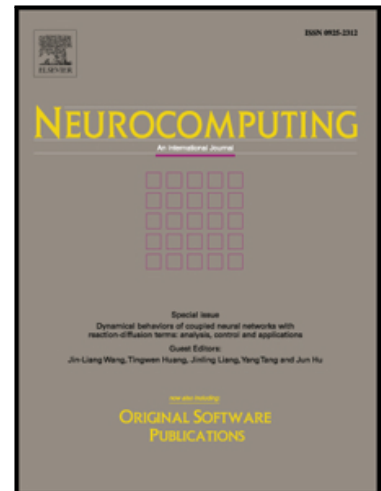
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Online classification for object tracking based on superpixel

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Abstract

Treating object tracking as a binary classification problem has been greatly explored in recent years. State-of-the-art classification based trackers perform better robustness than many of the other existing trackers. In this paper, we propose a collaborative model by incorporating the local and holistic models together which is corresponding to discriminative and generative models in tracking-classification-framework. At the local level, an on-line Random Forest (RF) classifier is trained to distinguish the superpixels of the object from the background. A series of local superpixels are used to represent the target, so as to adapt the appearance variances. The discriminative model is used to classify superpixels in the next frame as either belonging to the object or background. A confidence map consisting of dependability and stability is formed to measure the probabilities of superpxiels pertaining to the target from the classifier. A modified mean-shift is proposed to work on the confidence map to find the peak, where is the position of the target. Meanwhile, a separate component for managing the training set dynamically is employed to control the updating of the RF model. At the global level, the target is represented by covariance matrix of multi-scale bounding boxes. The generative model is applied for protection measure, which can effectively reduce the drifts during

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