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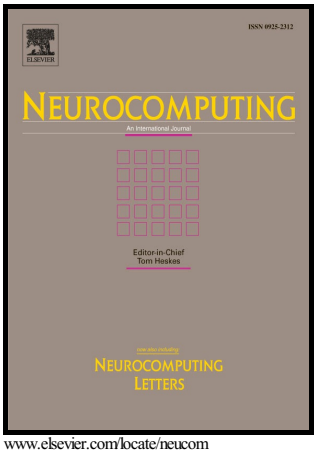

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Abstract

In order to track the target object effectively in the presence of significant appearance variation, e.g., occlusion, scale variation, deformation, fast motion and background clutter, we develop a new approach based on hierarchical appearance model under the Bayesian framework. The proposed approach represents the target at two levels, i.e., the local and the global levels. At the local level, a set of local patches are used to represent the target so as to adapt the changes in appearance. Likelihood defined as the weighted sum of reliability index and stability index is applied to evaluate how likely a patch pertaining to the target. At the global level, the target is represented by using double bounding boxes regarding the foreground and background, respectively. The inner bounding box only contains the target region, and the outer bounding box contains both the target region and