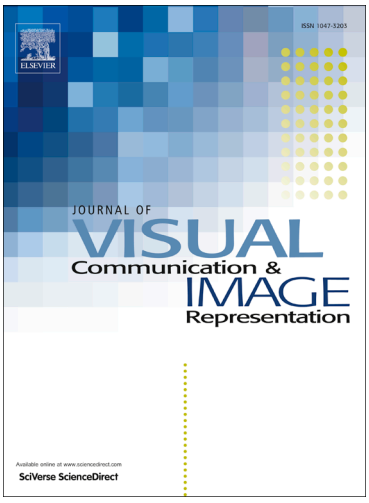


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# Multi-task based Object Tracking via a Collaborative Model

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**Abstract**

This paper presents a multi-task based object tracking algorithm via a collaborative model. Under the framework of particle filtering, we develop a multi-task sparse learning based generative and discriminative classifier model. In the generative model, we propose a histogram based subspace learning method which takes advantage of adaptive templates update. In the discriminative model, we introduce an effective method to compute the confidence value which assigns more weights to the foreground than the background. A decomposition model is employed to take the common features and outliers of each particle into consideration. The alternating direction method of multipliers (ADMM) algorithm guarantees the optimization problem can be solved robustly and accurately. Qualitative and quantitative comparisons with nine state-of-the-art methods demonstrate the effectiveness and efficiency of our method in handling

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