
Regular paper

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# Visual Tracking via Salient Feature Extraction and Sparse Collaborative Model

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**Abstract:** Object tracking is always a very attractive research topic in computer vision and image processing. In this paper, an innovative method called salient-sparse-collaborative tracker (SSCT) is put forward, which exploits both object saliency and sparse representation. Within the proposed collaborative appearance model, the object salient feature map is built to create a salient-sparse discriminative model (SSDM) and a salient-sparse generative model (SSGM). In the SSDM module, the presented sparse model effectively distinguishes the target region from its background by using the salient feature map that further helps locate the object in complex environment. In the SSGM module, a sparse representation method with salient feature map is designed to improve the effectiveness of the templates and deal with occlusions. The update scheme takes advantage of salient correction, thus the SSCT algorithm can both handle the appearance variation as well as reduce tracking drifts effectively. Plenty of experiments with quantitative and qualitative comparisons on benchmark reveal the SSCT tracker is more competitive than several popular approaches.

**Keywords:** Salient Feature; Sparse Representation; Collaborative Model; Visual Tracking

## 1. Introduction

The research on visual object tracking is of great importance for multimedia application and artificial intelligence. It discusses how to estimate the object state in a series of subsequent video frames according to the given one from the first frame. Nowadays,