Learning a Deep Compact Image Representation for Visual Tracking

Naiyan Wang **Dit-Yan Yeung**
Department of Computer Science and Engineering
Hong Kong University of Science and Technology
winsty@gmail.com dyyeung@cse.ust.hk

Abstract

In this paper, we study the challenging problem of tracking the trajectory of a

that the tracked object can be represented by a sparse combination of overcomplete basis vectors. Many extensions [26, 25, 4, 21] have also been proposed. On the other hand, the discriminative approach treats tracking as a binary classification problem which learns to explicitly distinguish the object being tracked from its background. Some representative trackers in this category are the *online AdaBoost* (OAB) tracker [6], *multiple instance learning* (MIL) tracker [3], and *structured output tracker* (Struck) [8]. While generative trackers usually produce more accurate results under

What is specific to the particle filter approach is that it approximates the true posterior state distribution $p(s^t \mid y^{1:t})$ by a set of n samples, called particles, fs

contains a “bottleneck” which is a hidden layer with fewer units than the input units. We show the architecture of DAE in Fig. 1(a).

Let there be a total of k training samples. For the ith sample, let x_i denote the original data sample and $\tilde{x}_i$ be the corrupted version of x_i, where the corruption could be masking corruption, additive Gaussian noise or salt-and-pepper noise. For the network weights, let W and W' denote the weights for the encoder and dee and respe

(a) (b)

environment is very dark with illumination in the cluttered background. Since the car being tracked

References

[1] A. Adam, E. Rivlin, and I. Shimshoni. Robust fragments-based tracking using the integral histogram. In *CVPR*, pages 798–805, 2006.

[2] M. Arulampalam, S. Maskell, N. Gordon, and T. Clapp. A tutorial on particle filters for online nonlinear/non-Gaussian Bayesian tracking. *IEEE Transactions on Signal Processing*, 50(2):174–188, 2002.

[3] B. Babenko, M. Yang, and S. Belongie. Robust object tracking with online multiple instance learning.