Tracking Completion

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Motivation

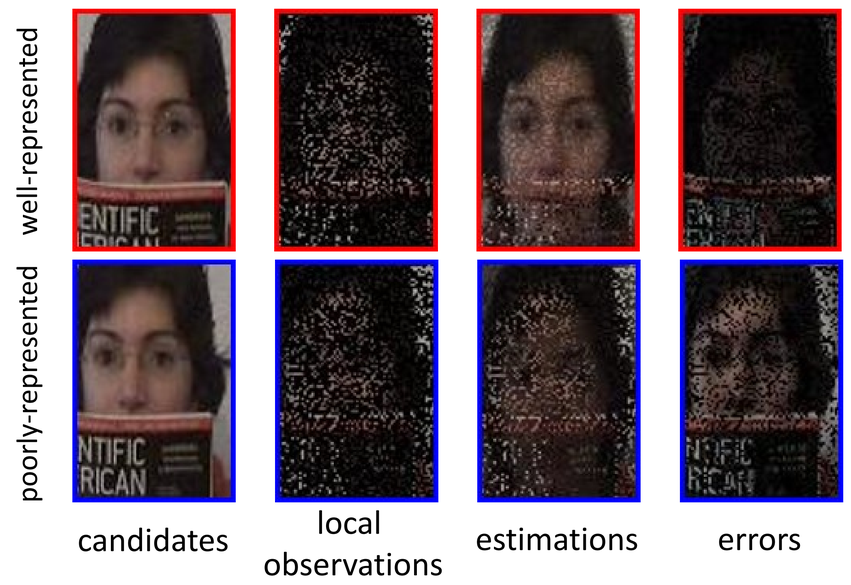
The Object Target Representation Model

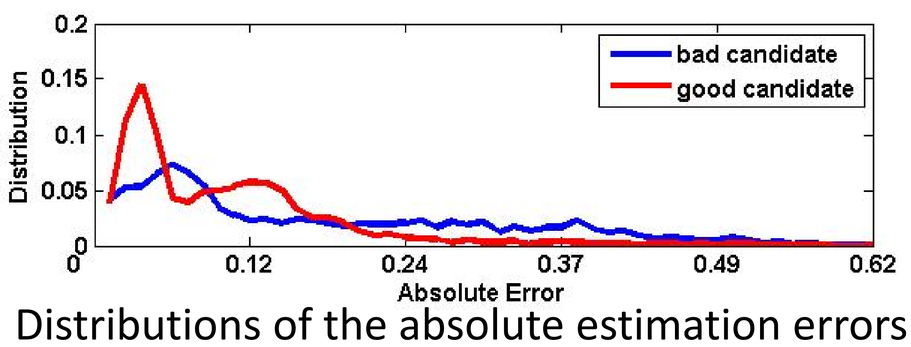
- **Global Model** is effective to holistic appearance changes, like illumination variations and pose changes.
- **Local Model** is intrinsically robust to the challenges, such as partial occlusions and local deformations.

Goal of this work

To leverage the effectiveness of global model in capturing overall information , and augment it with a local method to promote the robustness of the tracker.

An Example





Distributions of the absolute estimation errors

Solution

Basic Idea: according to the target summarization (global) and the target priors (local) to estimate an expected target.

$$\hat{\mathbf{y}}_k = \varphi\left(\mathbf{y}_1, \mathbf{y}_2, \ldots, \mathbf{y}_{k-1} | \Phi\right)$$

expected target | estimator | previous targets | target priors

The candidate **c** the most similar to the expected target is determined as the target.

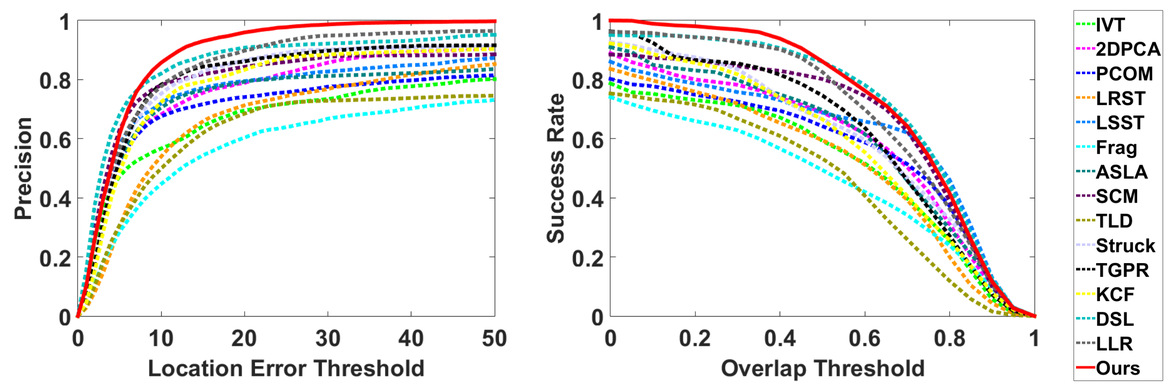
$$\mathbf{y}_k = \arg\min_{\mathbf{c}\in\mathcal{C}} \|\hat{\mathbf{y}}_k - \mathbf{c}\|$$

Matrix Completion

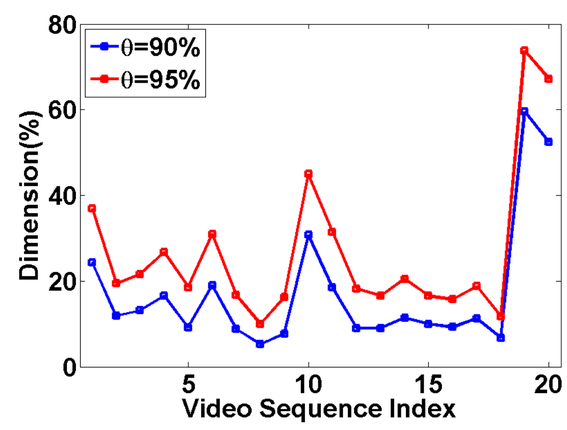
Subspace Model | Local Observation

Subspace summarizes the temporal targets.
Local Observation offers priors of the target.
Matrix Completion estimates the expected target and maintains the subspace structure.

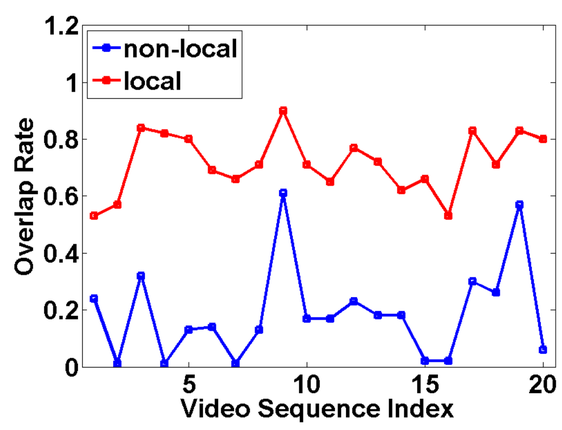
Experimental Results



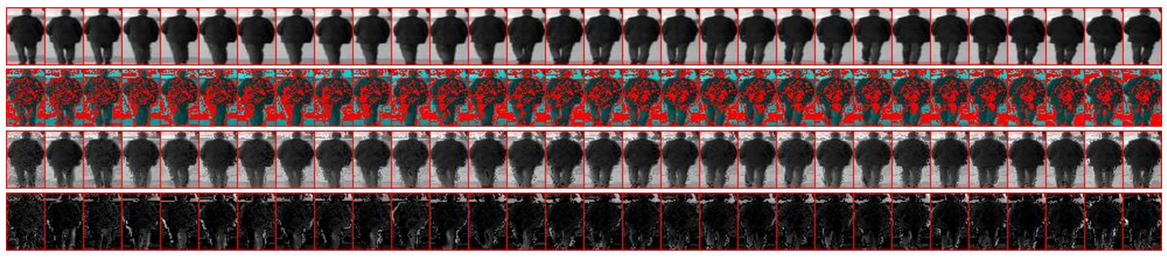
Performance on our dataset containing 20 sequences



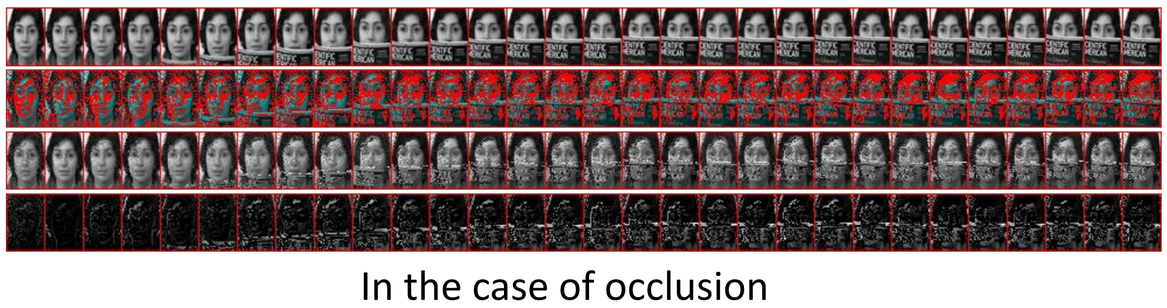
Low dimension verification



Local observation verification



in the case of deformation



In the case of occlusion

Visualization of the local observation