- RL is used to learn to perform data association between detections and tracked objects;
- general framework capable of using any existing single object trackers and detectors;
- the problem of data association between the detector and tracker is cast as an MDP with 4 states (or subspaces of the state space) - active, inactive, tracked, lost
    - active: a new object detected for the first time;
    - tracked: as long as an active object is still tracked in the current frame
    - lost: active object that is not tracked successfully due to occlusion or temporarily going out of view; can go back to tracked or become inactive;
    - inactive: when an object has been lost for a while; false positive detections also become inactive; permanent state so no transition going out of it
- transition functions are deterministic
- reward function is learned using RL to obtain the data association policy for lost state;
- policy in active sate is learned using SVM - equivalent to learning reward function for that state;
- policy in lost state is learned using soft margin SVM which gives a similarity measure between the targets and detections which in turn is used with Hungarian algorithm to perform associations between them;
- learning the similarity function for data association in the lost

state - for each target in each training sequence:

    - use the existing policy to take actions as described above;
    - if a target is lost and action does not match the ground truth, add the feature to the training set as negative example if it is a false positive and negative example if it is a false negative;
        - false positive: target is matched to a detection but is actually not present in the frame
        - false negative: target is not matched to any detection but is actually present in the frame and does match to one of the detections
    - re train the soft margin SVM classifier each time the training set is updated
- for each new frame:
    - process tracked objects and use non maximum suppression to remove detections covered by tracked objects
    - remove false detections - active to inactive state
    - obtain similarity between all lost targets and detections and use Hungarian algorithm to perform assignment
    - reset template for all assigned targets and move them to tracked state
- all unassigned detections become new objects and start getting tracked