# Review for Know Your Surroundings :Exploiting Scene Information for Object Tracking

Can Koz

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## 1 Summary

In object tracking problem, current approaches rely on target models and localization but this approach fails when there is a distractor or fast appearance changes. So using scene information in object tracking increases the performance of tracking. In this paper authors propose a novel tracking architecture which can encode a local region as a target background or distractor. This technique sets the state of the art performance in different tracking benchmarks.

## 2 Strengths

- In conventional frame by frame detection based tracking, only the target information is propagated through the sequence. In this work, additional scene information, such as background or distractor objects are propagated so that the tracker is aware of every object in the scene.
- Experiments show that the proposed technique achieves state of the art performance in 5 out of 6 benchmarks based on average overlap (AO) score.

## 3 Weaknesses

- The architecture is designed for short term tracking. In long term tracking datasets, this architecture has weaknesses compared to other methods. In LaSOT dataset, this architecture falls behind the other methods in performance.
- Since the architecure uses scene information for tracking, it has higher complexity and it is necessary to analyze the cost of this complexity in terms of parameters and inference time. In NFS dataset, they downsampled the original videos from 240 FPS to 30 FPS.

## 4 Evaluation

The methods are evaluated on 6 different benchmarks. VOT2018, GOT-10k, TrackingNet, OTB-100, NFS and LaSOT datasets. In the experiments expected average overlap, robustness and accuracy is analyzed on the datasets. In the ablation studies, impact of scene information, impact of state propagation, impact on propagation reliability and impact of appearance model are analyzed. Their results outperforms the other techniques in most of the datasets.

## 5 Final Comments and Future Work

Authors implemented a novel approach to Object Tracking problem which exploits the scene information. Instead of using only object information, this approach achieves state of the performance in object tracking benchmarks. As mentioned in the paper, the architecture is designed for short term tracking and it needs to be improved for long term tracking.