Using Synthetic Data for Person Tracking Under Adverse Weather Conditions (Supplementary Material)

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This document provides supplementary results and further details to enrich the analysis and discussion provided in the original manuscript. Further statistics and details regarding the collected real videos and the generated synthetic sequences are given throughout this material as well.

1. Additional Details on PTAW172Real and PTAW217Synth Datasets

In the main manuscript, we provided information regarding the collection and generation procedures followed to obtain both datasets. In this sections, we provide further information for PTAW172Real and PTAW217Synth datasets.

In addition to the bounding box annotations, we associate each video from PTAW172Real dataset with four different attributes, namely, *full occlusion*, *scale change*, *background clutter*, and *sudden camera motion*. If the object of interest is fully occluded at any frame, the attribute of *fully occlusion* is marked yes otherwise no. Similarly, if the ratio between the initial bounding box and any other bounding box is less than 0.5 or greater than 2, the video is considered under *scale change* category. While, the video is denoted as having *background clutter* if the object of interest is not easily distinguishable from the background. Similarly, if camera is making sudden motion, then

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Table 1: Statistics showing weather conditions distribution for each category.

Category	Snow	Rain	Fog
Full Occlusion	31	31	20
Scale Change	20	24	20
Background Clutter	20	19	15
Sudden Camera Motion	19	27	18

the object is denoted under *sudden camera* motion videos. The number of sequences in each weather condition for each of the four attributes is shown in Table 1.

2. Additional Results on the training experiments

In this sections, we provide more results regarding the trained deep trackers on our generated synthetic dataset, PTAW217Synth. As mentioned earlier, to solve the problem of lack of adverse weather conditions samples in the current visual object tracking datasets, we generated and trained four different deep trackers on PTAW217Synth dataset. Then we tested them on the test partition of PTAW172Real dataset. As can be seen from the Figure 1, the four trackers namely ATOM, DiMP, PrDiMP, and KYS show an improvement in the performance when training them on our dataset.

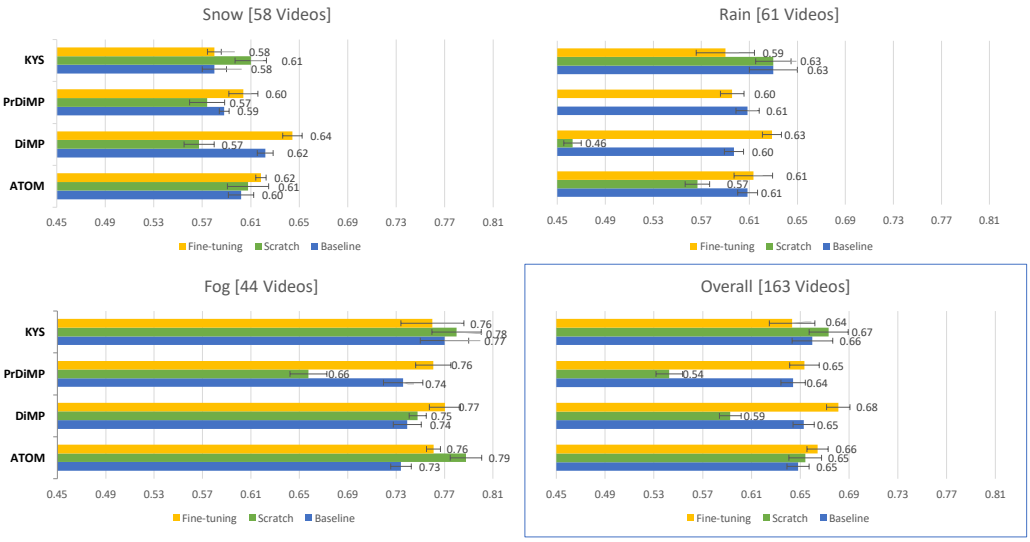

Figure 1: Precision results obtained with the two different training scenarios as compared to those of the baselines. Error bars give the standard deviation of the precision results. Training the baselines on our synthetic sequences improves the performance.