DiMP Learning Discriminative Model Prediction for Tracking ax1904.07220 iccv19

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Seems to have similar high-level structure as Siamese trackers in that there is a backbone network that processes both the annotated training frame as well as the test flame and the features extracted from the former are then used to predict a score map from the latter

The main difference is that the conversion of the test features into score map is done by a single convolutional layer whose weights are learned by the so called model predictor that takes the training features as input and uses some sort of SVM inspired discriminative loss to provide some sort of balance between the target area and negative samples in the background

This is supposed to to especially help deal with the easy negatives by allowing the corresponding loss to become arbitrarily small negative numbers without penalizing the overall loss instead of forcing them to be zero which might require more model capacity

There is also the bounding box regression branch which seems to be identical to ATOM

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Some sort of Gauss Newton -type approach is used in the optimization network thingy with the justification that the standard gradient descent didn’t work all that well

Both online and off-line trainings seem to be full of the usual heuristics

A claimed unique feature of off-line training as compared to Siamese trackers is that the two patches are both replaced by respective batches – all extracted from the same subsequence by dividing it into two parts

The loss function is itself learned using some sort of basis functions to learn some kind of mask used for relative weighting of the supposedly complementary regression and hinge losses As well as my spatial waiting mask to give more weight to the target center but the whole thing is a bit unclear

Supposed to be 57 FPS on 1080 but actual tests on 1070 show it to be less than a tenth as fast

On the whole, it gives an impression of an incremental and mostly heuristics based improvement on atom and eco