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Extends the the concepts of TP, FP and FN to TPA, FPA and FNA with A =Association

For each TP,

TPA = set of all TPs that belong to the same trajectory as the corresponding GT

FNA = set of all FN objects that belong to the same trajectory and all TP objects that belong to this trajectory but have been assigned to some other trajectory = all predicted boxes assigned to this trajectory but not actually belonging to it

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FPA = set of all FP objects predicted to be in the same trajectory as the TP object but assigned to a different trajectory or to none at all = all GT boxes in this trajectory that do not have a predicted box responding to them also assigned to this trajectory

HOTA is defined by a double ratio – dubbed double Jaccard - ratio of the sum of the ratio of TPA to (TPA + FPA + FNA) overall GT objects to the total number of TP, FP and FN objects

The Association between GT and predicted objects is done to maximize three objectives – number of TPs, main of the ratio of TPA to (TPA + FPA + FNA) over all the GT objects and mean of the localization similarity over all the GT objects

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Detailed analysis of the various design choices in HOTA along with justifications mostly in terms of all they are superior to the choices made in the existing metrics

Several, mostly trivial, extensions to HOTA to account for more specialized tracking scenarios

Extremely detailed and comprehensive critique all all three of the old metrics - MOTA, IDF1 and Track-mAP - with several specific examples of their failures

Tracker rankings based on HOTA do seem to make much more sense compared to MOTA especially with regard to the performance of baseline trackers like SORT and IOU

MOTA is shown to be little more than simple detection recall as had always been suspected

detailed comparison of the correlations between the different metrics and subjective human evaluation of tracking performance