24784: Trustworthy AI Mar 15, 2024

Challenge 1

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- **Description**
  precision $= \frac{TP}{TP+FP}$
  recall $= \frac{TP}{TP+FN}$

  With varying IoU thresholds, we can expect that the higher the threshold, the likelihood of $FalsePositive$ instances appearing will decrease due to the increased confidence of the model. This occurs because the criterion for making positive predictions becomes stricter, essentially forcing the model to be more certain about all the positive predictions it makes. Therefore, at IoU thresholds greater than 0.7, we can start to observe a noticeable deviation between the Raw curves and the Orange curves, and the later is calculated by $p(r) = \max_{r' \leq r} p(r')$. As the FP rate decreases, at the same level of recall rate, a lower precision could be expected and is understandable. From Table 1, we can see that the average precision (AP) trend reflects our initial assumption about the effect of the IoU threshold. Starting at an IoU threshold of 0.7, we observe a drop in AP, which continues as the threshold increases.

- P-R curves to each IoU

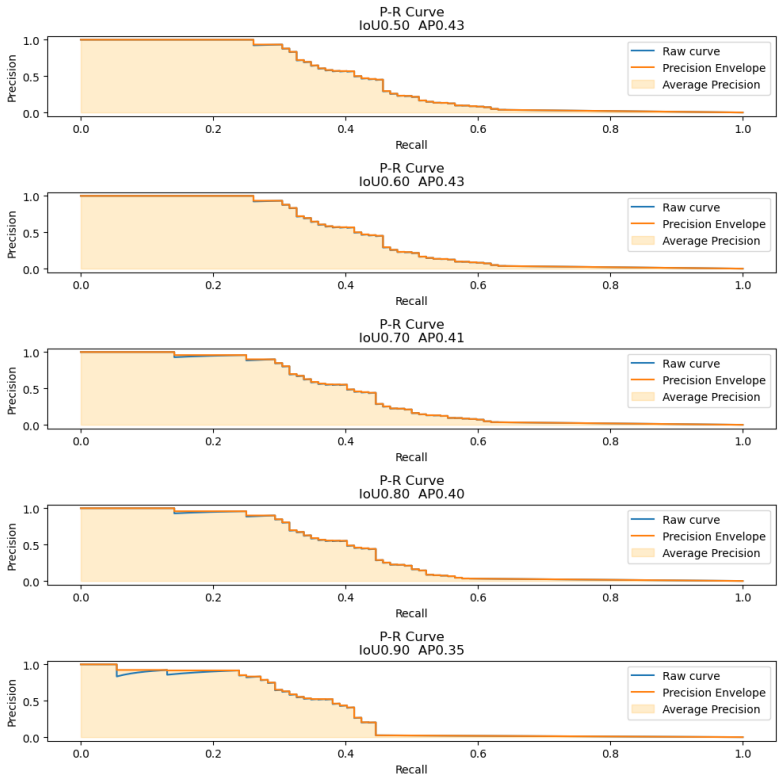

Figure 1: P-R Curves

- **IoU Threshold & AP**

IoU Threshold	AP
0.50	0.4272559074361477
0.60	0.4272559074361477
0.70	0.40686292416368364
0.80	0.4018855902817313
0.90	0.3466670309329718

Table 1: IoU Threshold vs AP