PhD

Feature Selective Anchor-Free Module for Single-Shot Object Detection ax1903.00621 cvpr19

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small anchor free add on module with 2 convolutional layers that can be attached to each level a feature pyramid

similar to FCOS and foveabox in predicting a morning box with class label for every single pixel

Training seems riddled with heuristics
- positive labels attached only to a small square region called effective box in the center of the object with only 20% of the height and width of the GT box
- This is surrounded by the so-called ignored region covering 50% of the dimensions whose purpose is not seem to be clear since it is not used for training

Main contribution seems to be to dynamically select the most appropriate feature pyramid level for each GT box as the level with the minimum total loss
- seems to be done in an online manner during training where only the level with the minimum loss as gradients propagated from the corresponding box
- not clear if it leads to switches in the levels for the same box as a loss is change
- Experiment seem to show that this online selection often follows the same rule as anchor based methods of having larger boxes in the upper layers and smaller ones in the lower layers with only a few exceptions

Predictions are the distances from the pixel to the four corners of the bounding box that our normalize by the completely arbitrary empirically chosen number 4

Seems to be designed to work in parallel with the anchor based branches where the top 1000 boxes from each one of the anchor free levels is chosen and concatenated with the boxes from the anchor based branches followed by the usual heavy NMS

Slight improvement of 1 to 2% AP over vanilla retinanet