

Project Weekly Report - 4

Topic: - Evaluate the Performance of Faster-RCNN and its variants in the case of a small object detection

Group Name: Tech Trio

Project Definition: 1

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⇒ Last week, we searched on FPN, M2F2-RCNN, and CFINet.

CFINet, it is for the coarse (Rough) to fine network. It is a two stage framework designed for small object detection. Also, it struggles with the small objects due to the overlapping between anchor boxes and object regions. Also, we searched 2 challenges, those addressed by the CFINet. Also, CFINet has demonstrated on the large scale object detection from the SODA-D and SODA-A, based on the baseline methods. Those two challenges: 1) CRPN and 2) FI.

⇒ 1) Coarse to Fine Region Proposal Network: In this component, we have learnt the process of generating high quality proposals for small objects. It refines detection by rough object locations and after it improves that step by step.

⇒ 2) Also, the use of FI (feature imitation) helps in learning of small object detecting, used for the small object detection based on the VisDrone dataset. In both approaches, it needs very high memory and complex training, which could be challenging.

From these things, we have learnt that we can experiment with CFI approach in region proposals to make RCNN faster at refining object locations and feature an imitation method for improving small object detection accuracy.

- Implement of FPN:

⇒ Also, we learnt the use of FPN and M2F2-RCNN in our project. We find the technique to integrate FPN with faster RCNN to improve small object detection in aerial images. Also, we tried to adapt anchor boxes to reduce the issues of missing parts of objects.

⇒ Also, we have made the model on FPN and we were able to detect small objects and feature extraction at multiple scales.

- Implement of M2F2 RCNN:

⇒ In the next week, we are planning to make a model on M2F2 RCNN and CFINet. In that we have planned to apply feature fusion techniques to combine deep and shallow features in faster RCNN. Also, we will incorporate attention mechanisms to improve detection accuracy of small objects and remove background noise.