Project Weekly report

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

Group Name: Tech Trio

Project Definition: 1

Group Member's names:- Kaushik Gohil, Richa Saraiya, Parth Mevada

❖ Model Analysis for Small Object Detection: -

Model name	Techniques	How it works
▪ Faster R-CNN with Feature Pyramid Networks (FPN)	▪ Feature Pyramid Networks (FPN)	▪ Uses multi-scale feature maps to improve small object detection by capturing features at different resolutions.
▪ M2F2-RCNN	▪ Multi-Scale Feature Fusion in Faster R-CNN	▪ Enhances Faster R-CNN by integrating multi-scale feature fusion for better accuracy in detecting small objects.
▪ CNN with Multi-Scale Feature Fusion	▪ Multi-Scale Feature Fusion in CNN	▪ Improves small object detection by combining feature information from multiple layers.
▪ Coarse-to-Fine Proposal Generation Model	▪ Coarse-to-Fine Proposal Generation + Imitation Learning	▪ Generates initial rough object proposals and refines them iteratively using imitation learning to detect small objects.
▪ DCN with Faster R-CNN	▪ Deformable Convolutions, Adaptive Receptive Fields, Spatial Sampling Offsets	▪ Replaces standard convolutions in Faster R-CNN with deformable ones, allowing adaptive receptive fields that improve feature extraction and localization for small objects.

❖ **Next week-** We will focus on method selection and reading research papers. The aim is to explore different techniques used understanding, their strengths and limitations.