Weekly Report 5

Group 6 Project 1
Training on EfficientDet

EfficientDet, known for its efficiency and accuracy in object detection, provides a powerful solution for detecting objects in aerial imagery. This report details the process of training and deploying an EfficientDet model on the VisDrone2019 dataset, specifically emphasizing the critical step of converting the dataset into the required format for compatibility with the TensorFlow Object Detection API.

The EfficientDet architecture was written by Google Brain. EfficientDet s built on top of EfficientNet, a convolutional neural network that is pretrained on the ImageNet image database for classification. EfficientDet pools and mixes portions of the image at given granularities and forms features that are passed through a NAS-FPN feature fusion layer. The NAS-FPN combines various features at varying granularities and passes them forward to the detection head, where bounding boxes and class labels are predicted.

Let's see how EfficientDet compares to other models

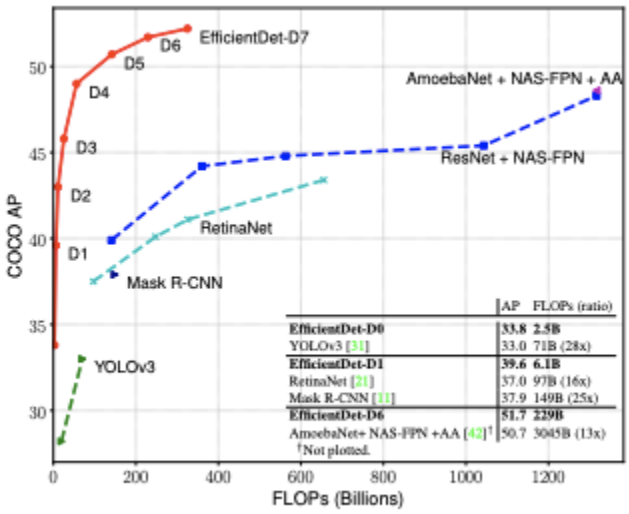

Figure 1: **Model FLOPs vs. COCO accuracy –** All num-

Data Preparation: Conversion to TFRecord Format
The first crucial step involves converting the VisDrone2019 dataset into the TFRecord format. This format is essential for compatibility with the TensorFlow Object Detection API.

Model Config
Download the pre-trained EfficientDet model weights from the TensorFlow 2 Object Detection Model Zoo. Subsequently, create a training pipeline configuration file tailored to the VisDrone2019 dataset.

Adjust parameters such as paths, the number of classes, and other hyperparameters to optimize the model for the specific dataset characteristics.

Evaluation

After training we aim to evaluate the model's performance on the test set, using metrics like precision, recall, and mAP. If necessary, we will iterate on the training process by adjusting hyperparameters or experimenting with different EfficientDet model versions.

Resources

Colab File(Under Progress):-
https://colab.research.google.com/drive/1tqX7qOcXcMgzAK-p8pKOVWSaRTu91Lvt?usp=sharing\
Dataset:-
https://drive.google.com/drive/folders/1czLDSuEISWEZAAOMZvr7uNB1QO49gTk9?usp=drive_link

References

https://roboflow.com/model/efficientdet-tensorflow-2

https://blog.roboflow.com/breaking-down-efficientdet/