RecVis22
Open Images - Object Detection
Project Proposal

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Motivation

Finding and detecting objects at images become one the most vital parts of Computer Vision at our time. From simple face detection for unlocking screen to applications ranging across search, robotics, self-driving cars, and different military object from satellite images. At this project I will use most modern object detection models and for finding multiple objects at one image.

1. Work plan

1.1. Modeling

We will explore different detection algorithms starting with Fast R-CNN[1] and other basic algorithms. Then we will apply more modern algorithms like R-FCN[2]. And finally we will use recently created algorithms and try to modernize them in order to achieve best result.

1.2. Dataset

The dataset will be taken from the Kaggle website. It consists of different images with bounding boxes, so we don't have to preprocess images by ourselves. However, the size of the dataset is rather big, so we will decrease number of images in order to decrease training time.

1.3. Experiments

First, we will try to analyze the concepts of detection and how it differs from simple image classification. Then we will try to implement standard detection and try to improve the performance by adding some modern concepts.

Finally, we will implement lastly published object detection models and algorithms, try to merge them, and achieve the greatest performance.

2. Work assignment

Theoretical work

Reading papers and understanding state-of-the-art techniques.

Modeling work

Then importing of the modern algorithms and comparison with the previous ones. And finally, use cutting-edge models and merge concepts to create a new model.

References

[1] Faster R-CNN Explained for Object Detection Tasks by Ahmed Favze Gad

[2] R-FCN: Object Detection via Region-based Fully Convolutional Networks Jifeng Dai, Yi Li, Kaiming He, Jian Sun