

Case Study: Fast R-CNN v/s YOLOv3

In this project, we will be carrying out a Computer Vision case study on the advantages and disadvantages of classifying objects in an image using YOLOv3 and Fast R-CNN Deep Learning algorithms.

Fast R-CNN is used to classify the object in a given image be it single object or set of objects or group similar objects placed close to each other. This based on the principal of 2 sets of CNN's where in the former proposes a set of regions called Region Proposal Network while the later uses these region to classify objects and identify their position in the image.

YOLOv3 is referred as You Only See Once implementation of CNN. This is based on the principal that an image is fed to YOLOv3 architecture only once. Herein, a set of bounding boxes that consists of potential objects are identified and processed to classify various objects in the image. Object classification training and classification using YOLOv3 is quick the expense of accuracy as the architecture sees the image only once during training.

Datasets used for the above case study are as below:

- Fast R-CNN - Red/Blood White Cell Dataset
- YOLOv3 – Kangaroo Dataset

References:

- <https://medium.com/datadriveninvestor/computer-vision-a-journey-from-cnn-to-mask-r-cnn-and-yolo-1d141eba6e04>
- <https://medium.com/analytics-vidhya/a-practical-implementation-of-the-faster-r-cnn-algorithm-for-object-detection-part-2-with-cac45dada619>
- <https://medium.com/analytics-vidhya/a-practical-implementation-of-the-faster-r-cnn-algorithm-for-object-detection-part-2-with-cac45dada619>
- <https://machinelearningmastery.com/how-to-perform-object-detection-with-yolov3-in-keras/>

Note:

The datasets used in above case study is subject to change upon further reading to facilitate best representation of Fast R-CNN and YOLOv3 algorithm.