
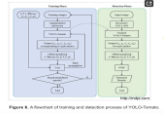


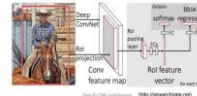
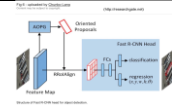
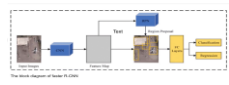

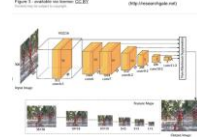



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Methodologies of Object Detections	Diagrams	Flowcharts
The YOLO algorithm takes an image as input and then uses a simple deep convolutional neural network to detect objects in the image.		
Region-based Convolutional Neural Network (R-CNN) is a type of deep learning architecture used for object detection in computer vision tasks.		
Fast R-CNN is an object detection algorithm that processes images through a CNN backbone, extracts feature, generates region proposals, and then classifies and refines bounding boxes for each proposal.		
Faster R-CNN is a two-stage object detection algorithm that uses a Regional Proposal Network (RPN) and a CNN to identify and locate objects in images.		
SSD means Single Shot Multi Box Detector. It uses a single convolutional neural network (CNN) to predict both bounding boxes and class labels for objects in an image, making it faster than traditional two-stage methods.		
<p>Steps involved in a typical object detection task (Pareto.AI)</p> <p>*Image preprocessing-> Feature extraction->Region proposal ->Classification and Localization->Non-Maximum Suppression->Bounding Box Regression>Post processing*</p>	<p>Tools and Libraries</p> <ol style="list-style-type: none"> 1. TensorFlow –“ is a leading open-source library designed for developing and deploying state-of-the-art machine learning applications”. 2. Keras –“ is a high-level, user-friendly Python API designed for building and experimenting with neural networks, simplifying the process of developing and deploying deep learning models”. 3. OpenCV –“ used for Computer Vision and machine learning tasks, enabling image and video processing, object detection, and more”. <p>Google; AI Overview</p>	
<p>Bounding boxes – are rectangular regions drawn around objects in an image</p> <p>Annotations –process of labeling and identifying</p> <p>Confidence scores – numerical value (0 to1)</p> <p>Intersection over Union (IoU) – a metric used to measure accuracy</p>		
<p>Additional Resources</p> <ol style="list-style-type: none"> 1. https://viso.ai/deep-learning/object-detection/ 2. https://neptune.ai/blog/object-detection-algorithms-and-libraries 		

What I Have learned on This Assignment

This assignment is like a summary of what I should learn or must learn this spring semester. This exposed me to methodologies of Object Detection and made me improve my skills in a certain degree in technology. I got exposed to different algorithms like R-CNN, Fast R-CNN, Faster R-CNN, SSD, and YOLO. It made me explore through TensorFlow, Kera, and OpenCV. Through the process, there are so many challenges and troubleshooting tips out there to be tried. Learning doesn't stop here though. This concept of computer vision is very challenging for me but I find it very interesting.

How Could This Be Benefited in the Future

After this class is over, learning about Computer Vision will not stop here for sure. The skill will be mine to use in exploring further for a very successful journey in Computer Vision, Artificial Intelligence or the next inventions in technology which I can use in my line of work since AI is becoming more and more a necessity now in any area.

References:

AI Overview

Google

<http://geeksforgeeks.org>

<http://mdpi.com>

<https://medium.com>understanding-and-implementing...>

<http://researchgate.net>

<http://v7labs.com>

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