RCNN&Yolo

Assignment Questions

PW SKILLS

RCNN&Yolo

1. What is the main purpose of RCNN in object detection?
2. What is the difference between Fast RCNN and Faster RCNN?
3. How does YOLO handle object detection in real-time?
4. Explain the concept of Region Proposal Networks (RPN) in Faster RCNN.
5. How does YOLOv9 improve upon its predecessors?
6. What role does non-max suppression play in YOLO object detection?
7. Describe the data preparation process for training YOLOv9.
8. What is the significance of anchor boxes in object detection models like YOLOv9?
9. What is the key difference between YOLO and R-CNN architectures?
10. Why is Faster RCNN considered faster than Fast RCNN?
11. What is the role of selective search in RCNN?
12. How does YOLOv9 handle multiple classes in object detection?
13. What are the key differences between YOLOv3 and YOLOv9?
14. How is the loss function calculated in Faster RCNN?
15. Explain how YOLOv9 improves speed compared to earlier versions.
16. What are some challenges faced in training YOLOv9?
17. How does the YOLOv9 architecture handle large and small object detection?
18. What is the significance of fine-tuning in YOLO?
19. What is the concept of bounding box regression in Faster RCNN?
20. Describe how transfer learning is used in YOLO.
21. What is the role of the backbone network in object detection models like YOLOv9?
22. How does YOLO handle overlapping objects?
23. What is the importance of data augmentation in object detection?
24. How is performance evaluated in YOLO-based object detection?
25. How do the computational requirements of Faster RCNN compare to those of YOLO?
26. What role do convolutional layers play in object detection with RCNN?
27. How does the loss function in YOLO differ from other object detection models?
28. What are the key advantages of using YOLO for real-time object detection?
29. How does Faster RCNN handle the trade-off between accuracy and speed?
30. What is the role of the backbone network in both YOLO and Faster RCNN, and how do they differ?

Practical

1. How do you load and run inference on a custom image using the YOLOv8 model (labeled as YOLOv9)?
2. How do you load the Faster RCNN model with a ResNet50 backbone and print its architecture?
3. How do you perform inference on an online image using the Faster RCNN model and print the predictions?
4. How do you load an image and perform inference using YOLOv9, then display the detected objects with bounding boxes and class labels?
5. How do you display bounding boxes for the detected objects in an image using Faster RCNN?
6. How do you perform inference on a local image using Faster RCNN?
7. How can you change the confidence threshold for YOLO object detection and filter out low-confidence predictions?
8. How do you plot the training and validation loss curves for model evaluation?
9. How do you perform inference on multiple images from a local folder using Faster RCNN and display the bounding boxes for each?
10. How do you visualize the confidence scores alongside the bounding boxes for detected objects using Faster RCNN?
11. How can you save the inference results (with bounding boxes) as a new image after performing detection using YOLO?