

Q - 10 function of tensorflow in object detection.

1. `tf.image.decode_jpeg()`

Purpose: Converts image file into a Tensor.

Usage: Used to read image input before detection.

`image = tf.image.decode_jpeg(image_bytes)`

2. `tf.image.resize()`

Purpose: Resizes image to model's required input size.

`image = tf.image.resize(image, [300, 300])`

3. `tf.keras.layers.Conv2D()`

Purpose: Extracts features from images.

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layer = tf.nn.conv2d(32, (3, 3),
activation = 'relu')

4. tf.nn.max_pooling2d()

Purpose: Reduces image size while
keeping important features.

pool = tf.nn.max_pooling2d((2, 2))

5. tf.image.crop_and_resize()

Purpose: Extracts regions of interest
(ROI)

roi = tf.image.crop_and_resize(images,
boxes, box_indices, crop_size)

6. tf.image.non_max_suppression()

Purpose: Removes duplicate bounding
boxes.

selected = tf.image.non_max_suppression
(boxes, scores, max_output_size = 5)

7. `tf.keras.losses.Huber()`

Purpose: Used for bounding box regression loss.

`loss = tf.keras.losses.Huber()`

8. `tf.keras.applications.MobileNetV2()`

Purpose: Pretrained backbone for detection models.

`base_model = tf.keras.applications.MobileNetV2(weights = 'imagenet')`

9. `tf.image.draw_bounding_boxes()`

Purpose: Draws bounding boxes on detected objects.

`output = tf.image.draw_bounding_boxes(images, boxes)`

10. `tf.keras.Model()`

Purpose: Defines complete object detection model

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