

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.



layer = tf.keras.layers.Conv2D(32, (3, 3),  
activation = 'relu')

4. tf.keras.layers.MaxPooling2D()

Purpose: Reduces image size while  
keeping important features.

pool = tf.keras.layers.MaxPooling2D((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