Deep learning

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10 important Tensorflow functions commonly used in Object Detection.

1. tf.image.resize()
used to resize image to a fixed shape before feeding them into the model. It helps maintain uniform input dimensions.
2. tf.image.decode_jpeg()
Converts JPEG-encoded images into Tensor format. Used during dataset preprocessing.
3. tf.image.random_flip_left_right()
Performs data augmentation by randomly flipping images horizontally, improving model generalization.
4. tf.image.convert_image_dtype()
Converts image datatype (e.g., uint8 to float32) for better numerical stability.
5. tf.data.Dataset.from_tensor_slices()
Creates Tensorflow datasets from images paths & labels for efficient data loading.
6. tf.keras.applications.MobileNetV2()
Provides a pre-trained backbone model used in many object detection architectures like SSD.

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7. tf.keras.layers.Conv2D()
Applies convolution operations to extract spatial features from images.

8. tf.image.non_max_suppression()
Eliminates overlapping bounding boxes & keeps the most confident detections.

9. tf.keras.losses.CategoricalCrossentropy()
Used to calculate classification loss for detected object classes.

10. tf.keras.optimizers.Adam()
An optimizer used to update model weights efficiently during training.