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In [1]: import tensorflow as tf
from tensorflow.keras import layers, models, datasets
from tensorflow.keras.utils import to_categorical

# Load and preprocess CIFAR-10 dataset
(train_images, train_labels), (test_images, test_labels) = datasets.cifar10.load_data()
train_images, test_images = train_images / 255.0, test_images / 255.0 # Normalize pixel values to be between 0 and 1

# One-hot encode labels
train_labels_one_hot = to_categorical(train_labels)
test_labels_one_hot = to_categorical(test_labels)

# Define CNN model
model = models.Sequential([
    layers.Conv2D(32, (3, 3), activation='relu', input_shape=(32, 32, 3)),
    layers.MaxPooling2D((2, 2)),
    layers.Conv2D(64, (3, 3), activation='relu'),
    layers.MaxPooling2D((2, 2)),
    layers.Conv2D(64, (3, 3), activation='relu'),
    layers.Flatten(),
    layers.Dense(64, activation='relu'),
    layers.Dense(10, activation='softmax')
])

# Compile the model
model.compile(optimizer='adam',
              loss='categorical_crossentropy',
              metrics=['accuracy'])

# Train the model
model.fit(train_images, train_labels_one_hot, epochs=10, batch_size=64, validation_split=0.2)

# Evaluate the model on the test set
test_loss, test_acc = model.evaluate(test_images, test_labels_one_hot)
print(f'Test accuracy: {test_acc}')
```

WARNING:tensorflow:From C:\Users\91707\anaconda3\lib\site-packages\keras\src\losses.py:2976: The name tf.losses.sparse_softmax_cross_entropy is deprecated. Please use tf.compat.v1.losses.sparse_softmax_cross_entropy instead.

WARNING:tensorflow:From C:\Users\91707\anaconda3\lib\site-packages\keras\src\backend.py:873: The name tf.get_default_graph is deprecated. Please use tf.compat.v1.get_default_graph instead.

WARNING:tensorflow:From C:\Users\91707\anaconda3\lib\site-packages\keras\src\layers\pooling\max_pooling2d.py:161: The name tf.nn.max_pool is deprecated. Please use tf.nn.max_pool2d instead.

WARNING:tensorflow:From C:\Users\91707\anaconda3\lib\site-packages\keras\src\optimizers__init__.py:309: The name tf.train.Optimizer is deprecated. Please use tf.compat.v1.train.Optimizer instead.

Epoch 1/10

WARNING:tensorflow:From C:\Users\91707\anaconda3\lib\site-packages\keras\src\utils\tf_utils.py:492: The name tf.ragged.RaggedTensorValue is deprecated. Please use tf.compat.v1.ragged.RaggedTensorValue instead.

WARNING:tensorflow:From C:\Users\91707\anaconda3\lib\site-packages\keras\src\engine\base_layer_utils.py:384: The name tf.executing_eagerly_outside_functions is deprecated. Please use tf.compat.v1.executing_eagerly_outside_functions instead.

625/625 [=====] - 11s 16ms/step - loss: 1.6391 - accuracy: 0.4024 - val_loss: 1.4502 - val_accuracy: 0.4833

Epoch 2/10

625/625 [=====] - 9s 15ms/step - loss: 1.2829 - accuracy: 0.5403 - val_loss: 1.2105 - val_accuracy: 0.5702

Epoch 3/10

625/625 [=====] - 9s 14ms/step - loss: 1.1347 - accuracy: 0.6045 - val_loss: 1.0921 - val_accuracy: 0.6213

Epoch 4/10

625/625 [=====] - 9s 15ms/step - loss: 1.0351 - accuracy: 0.6348 - val_loss: 1.0827 - val_accuracy: 0.6246

Epoch 5/10

625/625 [=====] - 10s 16ms/step - loss: 0.9540 - accuracy: 0.6680 - val_loss: 0.9869 - val_accuracy: 0.6538

Epoch 6/10

625/625 [=====] - 10s 16ms/step - loss: 0.8893 - accuracy: 0.6900 - val_loss: 0.9447 - val_accuracy: 0.6742

Epoch 7/10

625/625 [=====] - 11s 17ms/step - loss: 0.8297 - accuracy: 0.7099 - val_loss: 0.9202 - val_accuracy: 0.6795

Epoch 8/10

625/625 [=====] - 11s 17ms/step - loss: 0.7826 - accuracy: 0.7277 - val_loss: 0.8850 - val_accuracy: 0.6943

Epoch 9/10

625/625 [=====] - 10s 17ms/step - loss: 0.7418 - accuracy: 0.7419 - val_loss: 0.9180 - val_accuracy: 0.

6869

Epoch 10/10

625/625 [=====] - 10s 16ms/step - loss: 0.6981 - accuracy: 0.7553 - val_loss: 0.8899 - val_accuracy: 0.

7038

313/313 [=====] - 1s 4ms/step - loss: 0.9008 - accuracy: 0.7001

Test accuracy: 0.7001000046730042