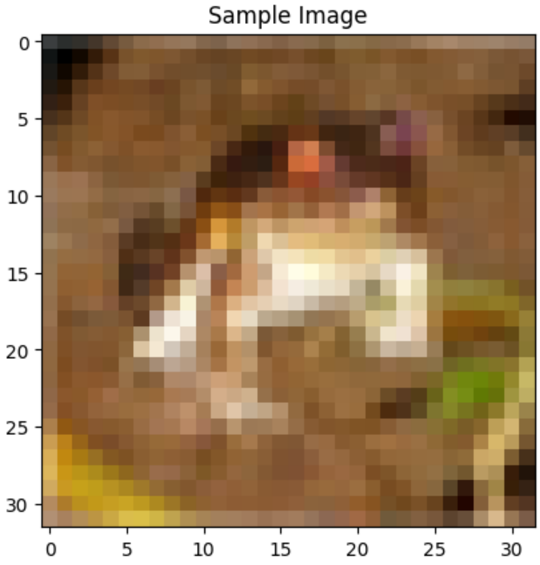
```
import tensorflow as tf
from tensorflow.keras.datasets import cifar10
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Conv2D, MaxPooling2D, Flatten, Dense, Dropout
import matplotlib.pyplot as plt


# Load CIFAR-10 dataset
(x_train, y_train), (x_test, y_test) = cifar10.load_data()

# Normalize the data (pixel values between 0 and 1)
x_train = x_train.astype("float32") / 255.0
x_test = x_test.astype("float32") / 255.0

# Convert labels to one-hot encoding
y_train = tf.keras.utils.to_categorical(y_train, 10)
y_test = tf.keras.utils.to_categorical(y_test, 10)

# Show one sample image
plt.imshow(x_train[0])
plt.title("Sample Image")
plt.show()
```

```
Downloading data from https://www.cs.toronto.edu/~kriz/cifar-10-python.tar.gz
170498071/170498071 ━━━━━━━━━━━━━━━━━━━━ 13s 0us/step
```



```
model = Sequential([
    Conv2D(32, (3, 3), activation='relu', input_shape=(32, 32, 3)),
    MaxPooling2D((2, 2)),

    Conv2D(64, (3, 3), activation='relu'),
    MaxPooling2D((2, 2)),

    Flatten(),
    Dense(64, activation='relu'),
    Dropout(0.5),
    Dense(10, activation='softmax')  # 10 classes in CIFAR-10
])


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

history = model.fit(x_train, y_train, epochs=10, validation_data=(x_test, y_test))
```

```
Epoch 1/10
1563/1563 ━━━━━━━━━━━━━━━━━━━━ 13s 5ms/step - accuracy: 0.2698 - loss: 1.9385 - val_accuracy: 0.5038 - val_loss: 1.3811
Epoch 2/10
1563/1563 ━━━━━━━━━━━━━━━━━━━━ 6s 4ms/step - accuracy: 0.4496 - loss: 1.5089 - val_accuracy: 0.5527 - val_loss: 1.2707
Epoch 3/10
1563/1563 ━━━━━━━━━━━━━━━━━━━━ 10s 4ms/step - accuracy: 0.5089 - loss: 1.3627 - val_accuracy: 0.6085 - val_loss: 1.1078
Epoch 4/10
1563/1563 ━━━━━━━━━━━━━━━━━━━━ 10s 4ms/step - accuracy: 0.5473 - loss: 1.2662 - val_accuracy: 0.6261 - val_loss: 1.0722
Epoch 5/10
1563/1563 ━━━━━━━━━━━━━━━━━━━━ 10s 4ms/step - accuracy: 0.5656 - loss: 1.2107 - val_accuracy: 0.6411 - val_loss: 1.0426
Epoch 6/10
1563/1563 ━━━━━━━━━━━━━━━━━━━━ 6s 4ms/step - accuracy: 0.5915 - loss: 1.1436 - val_accuracy: 0.6578 - val_loss: 0.9983
Epoch 7/10
```

```
1563/1563 ━━━━━━━━━━━━━━━━━━━━ 11s 4ms/step - accuracy: 0.6119 - loss: 1.0947 - val_accuracy: 0.6685 - val_loss: 0.9577
Epoch 8/10
1563/1563 ━━━━━━━━━━━━━━━━━━━━ 9s 3ms/step - accuracy: 0.6220 - loss: 1.0560 - val_accuracy: 0.6666 - val_loss: 0.9489
Epoch 9/10
1563/1563 ━━━━━━━━━━━━━━━━━━━━ 7s 4ms/step - accuracy: 0.6387 - loss: 1.0178 - val_accuracy: 0.6839 - val_loss: 0.9193
Epoch 10/10
1563/1563 ━━━━━━━━━━━━━━━━━━━━ 10s 4ms/step - accuracy: 0.6409 - loss: 1.0013 - val_accuracy: 0.6649 - val_loss: 0.9627
```

```
loss, accuracy = model.evaluate(x_test, y_test)
print(f"Test Accuracy: {accuracy * 100:.2f}%")
```

```
313/313 ━━━━━━━━━━━━━━━━━━━━ 1s 2ms/step - accuracy: 0.6628 - loss: 0.9664
Test Accuracy: 66.49%
```

```
model.save('my_model.keras')
```

Start coding or generate with AI.