###ANNNNNN

import tensorflow as tf

from tensorflow.keras import datasets, layers, models

import matplotlib.pyplot as plt

(train\_images, train\_labels), (test\_images, test\_labels) = datasets.cifar10.load\_data()

# Normalize pixel values to be between 0 and 1

train\_images, test\_images = train\_images / 255.0, test\_images / 255.0

class\_names = ['airplane', 'automobile', 'bird', 'cat', 'deer',

               'dog', 'frog', 'horse', 'ship', 'truck']

plt.figure(figsize=(8,8))

for i in range(25):

    plt.subplot(5,5,i+1)

    plt.xticks([])

    plt.yticks([])

    plt.grid(False)

    plt.imshow(train\_images[i])

    # The CIFAR labels happen to be arrays,

    #which is why we need the extra index

    plt.xlabel(class\_names[train\_labels[i][0]])

plt.show()

model = models.Sequential()

model.add(layers.Conv2D(32, (3, 3), activation='relu', input\_shape=(32, 32, 3)))

model.add(layers.MaxPooling2D((2, 2)))

model.add(layers.Conv2D(64, (3, 3), activation='relu'))

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model.summary()

model.add(layers.Flatten())

model.add(layers.Dense(64, activation='relu'))

model.add(layers.Dense(10))

model.compile(optimizer='adam',

              loss=tf.keras.losses.SparseCategoricalCrossentropy(from\_logits=True),

              metrics=['accuracy'])

# An epoch means training the neural network with all the

# training data for one cycle. Here I use 10 epochs

history = model.fit(train\_images, train\_labels, epochs=10,

                    validation\_data=(test\_images, test\_labels))

plt.plot(history.history['accuracy'],label='accuracy')

plt.plot(history.history['val\_accuracy'],label = 'val\_accuracy')

plt.xlabel('Epoch')

plt.ylabel('Accuracy')

plt.ylim([0.5, 1])

plt.legend(loc='lower right')

test\_loss, test\_acc = model.evaluate(test\_images,

                                     test\_labels,

                                     verbose=2)

print('Test Accuracy is',test\_acc)