

## Activity 5

This exercise offered practical experience with Convolutional Neural Networks (CNNs) through training a model on the CIFAR-10 dataset using Google Colab. After six epochs, the model achieved a test accuracy of 70%, which represents a strong outcome for a basic setup. We further validated the model by testing it on individual images, where the predictions aligned with the expected labels—demonstrating the model’s capability to capture key visual patterns. Overall, this activity served as an insightful introduction to real-world image classification applications.

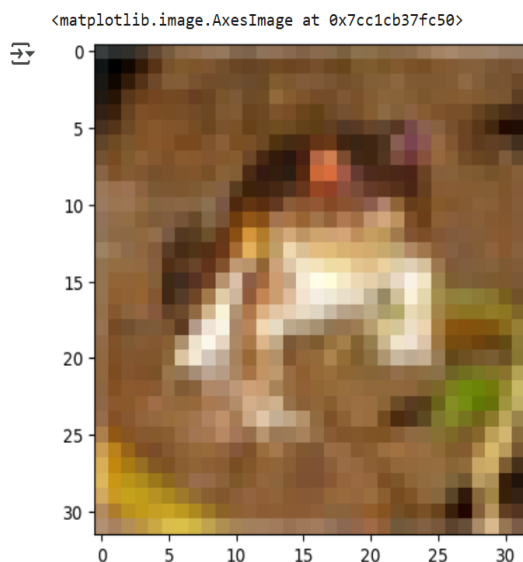
```
from tensorflow.keras.callbacks import EarlyStopping

[32] early_stop = EarlyStopping(monitor='val_loss',patience=2)

[33] history = model.fit(x_train,y_cat_train,epochs=25,validation_data=(x_val,y_val_cat),callbacks=[early_stop])

Epoch 1/25
1250/1250 — 57s 44ms/step - accuracy: 0.3529 - loss: 1.7734 - val_accuracy: 0.5076 - val_loss: 1.3369
Epoch 2/25
1250/1250 — 52s 41ms/step - accuracy: 0.5297 - loss: 1.3100 - val_accuracy: 0.5710 - val_loss: 1.2033
Epoch 3/25
1250/1250 — 80s 40ms/step - accuracy: 0.5901 - loss: 1.1543 - val_accuracy: 0.6083 - val_loss: 1.1141
Epoch 4/25
1250/1250 — 83s 41ms/step - accuracy: 0.6325 - loss: 1.0361 - val_accuracy: 0.6253 - val_loss: 1.0750
Epoch 5/25
1250/1250 — 80s 39ms/step - accuracy: 0.6714 - loss: 0.9391 - val_accuracy: 0.6270 - val_loss: 1.0709
Epoch 6/25
1250/1250 — 82s 40ms/step - accuracy: 0.7006 - loss: 0.8542 - val_accuracy: 0.6285 - val_loss: 1.0842
Epoch 7/25
1250/1250 — 83s 41ms/step - accuracy: 0.7299 - loss: 0.7782 - val_accuracy: 0.6312 - val_loss: 1.1111

[34] model.history.history.keys()
```

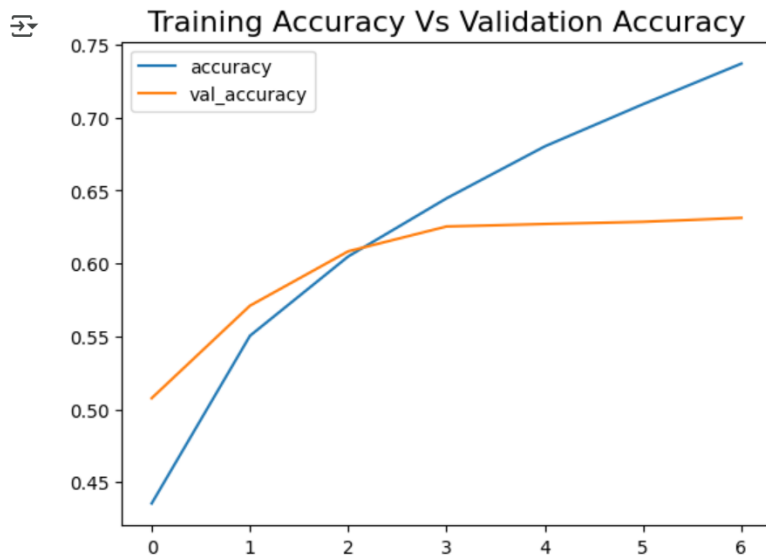


Variables Terminal



Executing (:

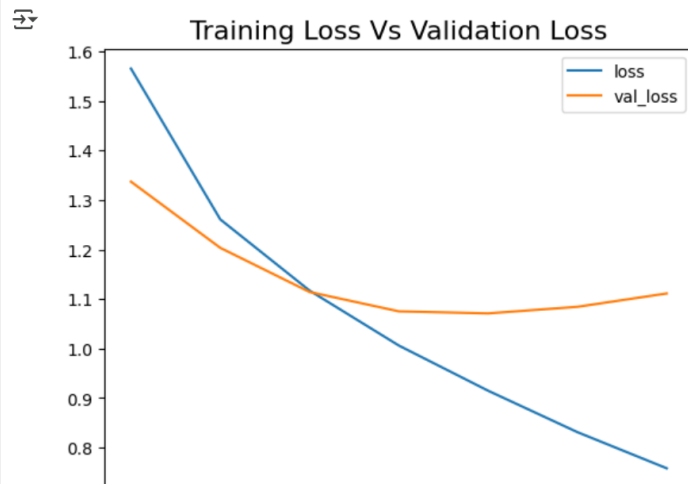
```
[38] plt.show()
```



Variables Terminal

Commands + Code + Text ▶ Run all

```
plt.title('Training Loss Vs Validation Loss', fontsize=16)  
plt.show()
```



Variables Terminal

