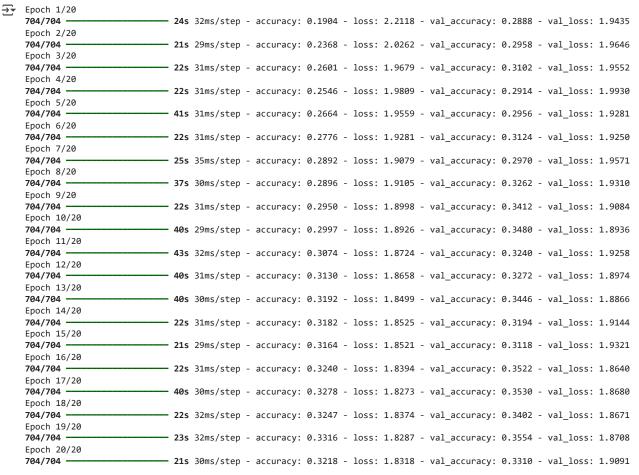
```
# Import necessary libraries
import tensorflow as tf
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Flatten, Dense, Dropout
from tensorflow.keras.utils import to categorical
from tensorflow.keras.datasets import cifar10
import matplotlib.pyplot as plt
import numpy as np
# Load CIFAR-10 dataset
(x_train, y_train), (x_test, y_test) = cifar10.load_data()
# Normalize pixel values to range [0, 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 = to_categorical(y_train, 10)
y_test = to_categorical(y_test, 10)
# Create validation set (10% of training data)
x val = x train[-5000:]
y_val = y_train[-5000:]
x_{train} = x_{train}[:-5000]
y_{train} = y_{train}[:-5000]
# Define ANN model
model = Sequential([
    Flatten(input_shape=(32, 32, 3)),
    Dense(512, activation='relu'),
    Dropout(0.5),
    Dense(256, activation='relu'),
    Dense(10, activation='softmax')
1)
# Compile the model
model.compile(
    optimizer='adam',
    loss='categorical_crossentropy',
    metrics=['accuracy']
)
# Train the model
history = model.fit(
    x_train, y_train,
    epochs=20,
    batch size=64,
    validation_data=(x_val, y_val)
)
# Evaluate on test set
test loss, test_acc = model.evaluate(x_test, y_test, verbose=0)
print(f"\nTest Accuracy: {test_acc:.4f}")
print(f"Test Loss: {test_loss:.4f}")
# Plot training/validation accuracy and loss
plt.figure(figsize=(12, 5))
# Accuracy plot
plt.subplot(1, 2, 1)
plt.plot(history.history['accuracy'], label='Train Acc')
plt.plot(history.history['val_accuracy'], label='Val Acc')
plt.title('Training and Validation Accuracy')
plt.xlabel('Epochs')
plt.ylabel('Accuracy')
plt.legend()
# Loss plot
plt.subplot(1, 2, 2)
plt.plot(history.history['loss'], label='Train Loss')
plt.plot(history.history['val_loss'], label='Val Loss')
plt.title('Training and Validation Loss')
plt.xlabel('Epochs')
plt.ylabel('Loss')
plt.legend()
```

plt.tight_layout()
plt.show()



Test Accuracy: 0.3337

