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# STEP 1: Upload your train.csv from Downloads
from google.colab import files
uploaded = files.upload() # Select your train.csv

# STEP 2: Import required libraries
import pandas as pd
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense
from tensorflow.keras.utils import to_categorical

# STEP 3: Load and prepare the dataset
df = pd.read_csv("train.csv") # Make sure it's named exactly this

# Features and target
X = df.drop("price_range", axis=1)
y = df["price_range"]

# One-hot encode the target (for softmax classification)
y = to_categorical(y, num_classes=4)

# Standardize the features
scaler = StandardScaler()
X_scaled = scaler.fit_transform(X)

# Split into train and test sets
X_train, X_test, y_train, y_test = train_test_split(
    X_scaled, y, test_size=0.2, random_state=42
)

# STEP 4: Build the neural network model
model = Sequential([
    Dense(64, input_dim=X_train.shape[1], activation='relu'),
    Dense(32, activation='relu'),
    Dense(4, activation='softmax') # 4 classes
])

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

# Train the model
model.fit(X_train, y_train, epochs=50, batch_size=32, validation_split=0.2)

# STEP 5: Evaluate the model
loss, accuracy = model.evaluate(X_test, y_test)
print(f"\n Test Accuracy: {accuracy * 100:.2f}%")

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OUTPUT

train.csv(text/csv) - 122403 bytes, last modified: 7/27/2025 - 100% done

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Saving train.csv to train (1).csv
/usr/local/lib/python3.11/dist-packages/keras/src/layers/core/dense.py:87: UserWarning: Do not pass an
`input_shape`/`input_dim` argument to a layer. When using Sequential models, prefer using an `Input(shape)` object as
the first layer in the model instead.
  super().__init__(activity_regularizer=activity_regularizer, **kwargs)
Epoch 1/50
40/40 ----- 2s 9ms/step - accuracy: 0.2713 - loss: 1.4166 - val_accuracy: 0.3781 - val_loss: 1.3294
Epoch 2/50
40/40 ----- 0s 5ms/step - accuracy: 0.4114 - loss: 1.2867 - val_accuracy: 0.4906 - val_loss: 1.2109
Epoch 3/50
40/40 ----- 0s 4ms/step - accuracy: 0.5643 - loss: 1.1234 - val_accuracy: 0.6000 - val_loss: 1.0096
Epoch 4/50
40/40 ----- 0s 4ms/step - accuracy: 0.6756 - loss: 0.9021 - val_accuracy: 0.6687 - val_loss: 0.7977
Epoch 5/50
40/40 ----- 0s 5ms/step - accuracy: 0.7889 - loss: 0.6685 - val_accuracy: 0.7531 - val_loss: 0.6369
Epoch 6/50
40/40 ----- 0s 5ms/step - accuracy: 0.8741 - loss: 0.5278 - val_accuracy: 0.8000 - val_loss: 0.5302
Epoch 7/50
40/40 ----- 0s 4ms/step - accuracy: 0.9200 - loss: 0.4101 - val_accuracy: 0.8469 - val_loss: 0.4547
Epoch 8/50
40/40 ----- 0s 5ms/step - accuracy: 0.9247 - loss: 0.3544 - val_accuracy: 0.8625 - val_loss: 0.3952
Epoch 9/50
40/40 ----- 0s 4ms/step - accuracy: 0.9322 - loss: 0.3083 - val_accuracy: 0.8906 - val_loss: 0.3567

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Epoch 10/50
40/40 ----- 0s 5ms/step - accuracy: 0.9509 - loss: 0.2534 - val_accuracy: 0.8875 - val_loss: 0.3134
Epoch 11/50
40/40 ----- 0s 4ms/step - accuracy: 0.9555 - loss: 0.2189 - val_accuracy: 0.8969 - val_loss: 0.2939
Epoch 12/50
40/40 ----- 0s 4ms/step - accuracy: 0.9671 - loss: 0.1924 - val_accuracy: 0.9031 - val_loss: 0.2674
Epoch 13/50
40/40 ----- 0s 4ms/step - accuracy: 0.9671 - loss: 0.1702 - val_accuracy: 0.9094 - val_loss: 0.2532
Epoch 14/50
40/40 ----- 0s 4ms/step - accuracy: 0.9663 - loss: 0.1575 - val_accuracy: 0.9062 - val_loss: 0.2339
Epoch 15/50
40/40 ----- 0s 5ms/step - accuracy: 0.9770 - loss: 0.1391 - val_accuracy: 0.9125 - val_loss: 0.2263
Epoch 16/50
40/40 ----- 0s 4ms/step - accuracy: 0.9821 - loss: 0.1188 - val_accuracy: 0.9062 - val_loss: 0.2189
Epoch 17/50
40/40 ----- 0s 5ms/step - accuracy: 0.9817 - loss: 0.1103 - val_accuracy: 0.9125 - val_loss: 0.2115
Epoch 18/50
40/40 ----- 0s 5ms/step - accuracy: 0.9885 - loss: 0.0977 - val_accuracy: 0.9156 - val_loss: 0.2061
Epoch 19/50
40/40 ----- 0s 4ms/step - accuracy: 0.9862 - loss: 0.0937 - val_accuracy: 0.9156 - val_loss: 0.2004
Epoch 20/50
40/40 ----- 0s 4ms/step - accuracy: 0.9936 - loss: 0.0838 - val_accuracy: 0.9187 - val_loss: 0.1941
Epoch 21/50
40/40 ----- 0s 4ms/step - accuracy: 0.9963 - loss: 0.0749 - val_accuracy: 0.9156 - val_loss: 0.1926
Epoch 22/50
40/40 ----- 0s 4ms/step - accuracy: 0.9955 - loss: 0.0648 - val_accuracy: 0.9187 - val_loss: 0.1973
Epoch 23/50
40/40 ----- 0s 4ms/step - accuracy: 0.9943 - loss: 0.0705 - val_accuracy: 0.9094 - val_loss: 0.1998
Epoch 24/50
40/40 ----- 0s 4ms/step - accuracy: 0.9985 - loss: 0.0564 - val_accuracy: 0.9156 - val_loss: 0.1895
Epoch 25/50
40/40 ----- 0s 4ms/step - accuracy: 0.9983 - loss: 0.0510 - val_accuracy: 0.9156 - val_loss: 0.1856
Epoch 26/50
40/40 ----- 0s 5ms/step - accuracy: 0.9961 - loss: 0.0498 - val_accuracy: 0.9156 - val_loss: 0.1873
Epoch 27/50
40/40 ----- 0s 4ms/step - accuracy: 0.9962 - loss: 0.0466 - val_accuracy: 0.9187 - val_loss: 0.1834
Epoch 28/50
40/40 ----- 0s 5ms/step - accuracy: 0.9990 - loss: 0.0397 - val_accuracy: 0.9219 - val_loss: 0.1912
Epoch 29/50
40/40 ----- 0s 4ms/step - accuracy: 0.9996 - loss: 0.0344 - val_accuracy: 0.9156 - val_loss: 0.1857
Epoch 30/50
40/40 ----- 0s 4ms/step - accuracy: 0.9984 - loss: 0.0337 - val_accuracy: 0.9094 - val_loss: 0.1846
Epoch 31/50
40/40 ----- 0s 4ms/step - accuracy: 0.9969 - loss: 0.0331 - val_accuracy: 0.9156 - val_loss: 0.1845
Epoch 32/50
40/40 ----- 0s 5ms/step - accuracy: 0.9994 - loss: 0.0292 - val_accuracy: 0.9250 - val_loss: 0.1848
Epoch 33/50
40/40 ----- 0s 4ms/step - accuracy: 0.9999 - loss: 0.0284 - val_accuracy: 0.9281 - val_loss: 0.1852
Epoch 34/50
40/40 ----- 1s 10ms/step - accuracy: 0.9996 - loss: 0.0251 - val_accuracy: 0.9281 - val_loss: 0.1881
Epoch 35/50
40/40 ----- 1s 7ms/step - accuracy: 1.0000 - loss: 0.0229 - val_accuracy: 0.9219 - val_loss: 0.1907
Epoch 36/50
40/40 ----- 1s 7ms/step - accuracy: 1.0000 - loss: 0.0219 - val_accuracy: 0.9156 - val_loss: 0.1916
Epoch 37/50
40/40 ----- 1s 6ms/step - accuracy: 0.9999 - loss: 0.0189 - val_accuracy: 0.9187 - val_loss: 0.1968
Epoch 38/50
40/40 ----- 0s 4ms/step - accuracy: 1.0000 - loss: 0.0192 - val_accuracy: 0.9156 - val_loss: 0.1949
Epoch 39/50
40/40 ----- 0s 4ms/step - accuracy: 1.0000 - loss: 0.0185 - val_accuracy: 0.9156 - val_loss: 0.1963
Epoch 40/50
40/40 ----- 0s 4ms/step - accuracy: 1.0000 - loss: 0.0161 - val_accuracy: 0.9281 - val_loss: 0.1965
Epoch 41/50
40/40 ----- 0s 4ms/step - accuracy: 1.0000 - loss: 0.0159 - val_accuracy: 0.9219 - val_loss: 0.1945
Epoch 42/50
40/40 ----- 0s 4ms/step - accuracy: 1.0000 - loss: 0.0143 - val_accuracy: 0.9219 - val_loss: 0.2010
Epoch 43/50
40/40 ----- 0s 4ms/step - accuracy: 1.0000 - loss: 0.0132 - val_accuracy: 0.9156 - val_loss: 0.1968
Epoch 44/50
40/40 ----- 0s 5ms/step - accuracy: 1.0000 - loss: 0.0131 - val_accuracy: 0.9219 - val_loss: 0.2022
Epoch 45/50
40/40 ----- 0s 4ms/step - accuracy: 1.0000 - loss: 0.0120 - val_accuracy: 0.9250 - val_loss: 0.2007
Epoch 46/50
40/40 ----- 0s 4ms/step - accuracy: 1.0000 - loss: 0.0104 - val_accuracy: 0.9187 - val_loss: 0.2029
Epoch 47/50
40/40 ----- 0s 4ms/step - accuracy: 1.0000 - loss: 0.0097 - val_accuracy: 0.9250 - val_loss: 0.2027
Epoch 48/50
40/40 ----- 0s 4ms/step - accuracy: 1.0000 - loss: 0.0092 - val_accuracy: 0.9187 - val_loss: 0.2041
Epoch 49/50
40/40 ----- 0s 5ms/step - accuracy: 1.0000 - loss: 0.0097 - val_accuracy: 0.9250 - val_loss: 0.2044
Epoch 50/50
40/40 ----- 0s 4ms/step - accuracy: 1.0000 - loss: 0.0087 - val_accuracy: 0.9281 - val_loss: 0.2027
13/13 ----- 0s 3ms/step - accuracy: 0.9375 - loss: 0.1340

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Test Accuracy: 91.75%