LAB Logbook

Lab 1

A screenshot of a chat

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Lab 2

A screenshot of a computer

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Lab 3

A screenshot of a computer program

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Lab 4

Code

# --- Import libraries ---

import pandas as pd

import numpy as np

import tensorflow as tf

from tensorflow import keras

from sklearn.metrics import mean\_absolute\_error

from sklearn.preprocessing import MinMaxScaler

data = pd.read\_csv(r"C:\Users\Teja9\Downloads\data\_stocks.csv")

data\_a = np.array(data)

n = data\_a.shape[0]

train\_end = int(0.8 \* n)

data\_train = data\_a[:train\_end, :]

data\_test = data\_a[train\_end:, :]

X\_train = data\_train[:, 1:]

y\_train = data\_train[:, 0]

X\_test = data\_test[:, 1:]

y\_test = data\_test[:, 0]

scaler\_X = MinMaxScaler()

X\_train = scaler\_X.fit\_transform(X\_train)

X\_test = scaler\_X.transform(X\_test)

y\_min = y\_train.min()

y\_max = y\_train.max()

y\_train\_norm = (y\_train - y\_min) / (y\_max - y\_min)

y\_test\_norm = (y\_test - y\_min) / (y\_max - y\_min)

first\_layer\_neurons = 654

second\_layer\_neurons = 327

model = keras.Sequential([

keras.Input(shape=(X\_train.shape[1],)),

keras.layers.Dense(first\_layer\_neurons, activation='relu', kernel\_initializer='normal'),

keras.layers.Dense(second\_layer\_neurons, activation='relu', kernel\_initializer='normal'),

keras.layers.Dense(1) # Output layer

])

model.compile(optimizer='adam', loss='mean\_squared\_error', metrics=['mae'])

print(model.summary())

history = model.fit(

X\_train, y\_train\_norm,

validation\_split=0.1,

epochs=10,

batch\_size=32,

verbose=1

)

pred\_norm = model.predict(X\_test)

pred = pred\_norm \* (y\_max - y\_min) + y\_min

mae = mean\_absolute\_error(y\_test, pred)

print("Mean Absolute Error (MAE) on test set:", mae)

Output

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Lab 5

Code

import tensorflow as tf

from tensorflow import keras

from sklearn.model\_selection import train\_test\_split

import numpy as np

# Example data (replace with your actual dataset)

X = np.random.rand(1000, 50, 5)

y = np.random.rand(1000, 2)

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.2, random\_state=42)

# Modified CNN model

model = keras.Sequential([

keras.layers.Conv1D(50, 5, padding='same', input\_shape=(50, 5), activation=tf.nn.relu, kernel\_initializer="normal"),

keras.layers.MaxPooling1D(7),

keras.layers.Conv1D(100, 5, padding='same', activation=tf.nn.relu, kernel\_initializer="normal"),

keras.layers.GlobalMaxPooling1D(),

keras.layers.Dense(25, activation=tf.nn.relu, kernel\_initializer="normal"),

keras.layers.Dense(2)

])

model.summary()

model.compile(optimizer='adam', loss='mse', metrics=['mae'])

history = model.fit(

X\_train, y\_train,

epochs=9, # 5 + 4 = 9

batch\_size=50,

validation\_split=0.2,

verbose=1

)

mse, mae = model.evaluate(X\_test, y\_test, verbose=1)

print(f"Test Mean Absolute Error (MAE): {mae:.5f}")

OUTPUT

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A screenshot of a computer

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Lab 6

Lab 7

Lab 8

Lab 9

Lab 10

Lab 11

Lab 12