**Deep Learning**

**Assignment:- 06**

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**#Code: -** import numpy as np import tensorflow as tf from tensorflow.keras.models import Sequential from tensorflow.keras.layers import Dense, Embedding, GlobalAveragePooling1D from tensorflow.keras.datasets import imdb from tensorflow.keras.preprocessing.sequence import pad\_sequences

# Step 1: Load and Preprocess the IMDB dataset max\_words = 10000 # Consider only the top 10,000 most frequent words max\_len = 200 # Limit review length to 200 words

# Load the dataset (training and testing splits)

(X\_train, y\_train), (X\_test, y\_test) = imdb.load\_data(num\_words=max\_words)

# Pad sequences to ensure uniform input size (200 words per review)

X\_train = pad\_sequences(X\_train, maxlen=max\_len)

X\_test = pad\_sequences(X\_test, maxlen=max\_len)

# Step 2: Build the Deep Neural Network Model model = Sequential([

Embedding(input\_dim=max\_words, output\_dim=128, input\_length=max\_len), # Embedding layer for word representation

GlobalAveragePooling1D(), # Global average pooling layer to reduce dimensions

Dense(64, activation='relu'), # Fully connected layer

Dense(1, activation='sigmoid') # Output layer (binary classification)

])

# Step 3: Compile the model model.compile(optimizer='adam',

loss='binary\_crossentropy', metrics=['accuracy'])

# Step 4: Train the model print("Training the model...") model.fit(X\_train, y\_train, epochs=10, batch\_size=64, validation\_data=(X\_test, y\_test))

# Step 5: Evaluate the model print("\nEvaluating the model...") test\_loss, test\_accuracy = model.evaluate(X\_test, y\_test) print(f"\nTest Accuracy: {test\_accuracy \* 100:.2f}%")

# Step 6: Decode and Predict Sentiments # Get the word index from the IMDB dataset word\_index = imdb.get\_word\_index() reverse\_word\_index = {value: key for key, value in word\_index.items()} # Reverse mapping

def decode\_review(encoded\_review):

"""Convert an encoded review back into text.""" return " ".join([reverse\_word\_index.get(i - 3, "?") for i in encoded\_review])

print("\nPredicting sentiments for sample reviews...") # Predict the sentiment of the first 5 reviews in the test set predictions = model.predict(X\_test[:5])

# Display the predictions along with the decoded reviews and actual labels

for i, pred in enumerate(predictions):

decoded\_review = decode\_review(X\_test[i]) sentiment = "Positive" if pred >= 0.5 else "Negative" actual\_sentiment = "Positive" if y\_test[i] == 1 else "Negative" print(f"\nReview {i+1}:") print(f"Text: {decoded\_review}") print(f"Predicted Sentiment: {sentiment}, Actual Label: {actual\_sentiment}")

# #Output: -

**Review 1:**

Text: ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? please give this one a miss br br ? ? and the rest of the cast rendered terrible performances the show is flat flat flat br br i don't know how michael madison could have allowed this one on his plate he almost seemed to know this wasn't going to work out and his performance was quite ? so all you madison fans give this a miss

Predicted Sentiment: Negative, Actual Label: Negative

**Review 2:**

Text: psychological ? it's very interesting that robert altman directed this considering the style and structure of his other films still the trademark altman audio style is evident here and there i think what really makes this film work is the brilliant performance by sandy dennis it's definitely one of her darker characters but she plays it so perfectly and convincingly that it's scary michael burns does a good job as the mute young man regular altman player michael murphy has a small part the ? moody set fits the content of the story very well in short this movie is a powerful study of loneliness sexual ? and desperation be patient ? up the atmosphere and pay attention to the wonderfully written script br br i praise robert altman this is one of his many films that deals with unconventional fascinating subject matter this film is disturbing but it's sincere and it's sure to ? a strong emotional response from the viewer if you want to see an unusual film some might even say bizarre this is worth the time br br unfortunately it's very difficult to find in video stores you may have to buy it off the internet

Predicted Sentiment: Positive, Actual Label: Positive

**Review 3:**

Text: everyone's horror the ? promptly eats the mayor and then goes on a merry rampage ? citizens at random a title card ? reads news of the king's ? throughout the kingdom when the now terrified ? once more ? ? for help he loses his temper and ? their community with lightning ? the moral of our story delivered by a hapless frog just before he is eaten is let well enough alone br br considering the time period when this startling little film was made and considering the fact that it was made by a russian ? at the height of that ? country's civil war it would be easy to see this as a ? about those events ? may or may not have had ? turmoil in mind when he made ? but whatever ? his choice of material the film stands as a ? tale of universal ? ? could be the soviet union italy germany or japan in the 1930s or any country of any era that lets its guard down and is overwhelmed by ? it's a fascinating film even a charming one in its macabre way but its message is no joke

Predicted Sentiment: Positive, Actual Label: Positive

**Review 4:**

Text: ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? i generally love this type of movie however this time i found myself wanting to kick the screen since i can't do that i will just complain about it this was absolutely idiotic the things that happen with the dead kids are very cool but the alive people are absolute idiots i am a grown man pretty big and i can defend myself well however i would not do half the stuff the little girl does in this movie also the mother in this movie is reckless with her children to the point of neglect i wish i wasn't so angry about her and her actions because i would have otherwise enjoyed the flick what a number she was take my advise and fast forward through everything you see her do until the end also is anyone else getting sick of watching movies that are filmed so dark anymore one can hardly see what is being filmed as an audience we are ? involved with the actions on the screen so then why the hell can't we have night vision

Predicted Sentiment: Positive, Actual Label: Negative

**Review 5:**

Text: ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? like some other people wrote i'm a die hard mario fan and i loved this game br br this game starts slightly boring but trust me it's worth it as soon as you start your hooked the levels are fun and ? they will hook you ? your mind turns to ? i'm not kidding this game is also ? and is beautifully done br br to keep this spoiler free i have to keep my mouth shut about details but please try this game it'll be worth it br br story 9 9 action 10 1 it's that good ? 10 attention ? 10 average 10

Predicted Sentiment: Positive, Actual Label: Positive