Import numpy as np

From tensorflow.keras.preprocessing.text import Tokenizer

From tensorflow.keras.preprocessing.sequence import pad\_sequences

From tensorflow.keras.models import Sequential

From tensorflow.keras.layers import Embedding, Flatten, Dense

# Sample restaurant review data

Reviews = [

“The food was amazing, I highly recommend it!”,

“Terrible service, I won’t be coming back.”,

“Great ambiance and friendly staff, will definitely visit again.”,

“Disappointing experience, the food was cold and tasteless.”

]

Labels = np.array([1, 0, 1, 0]) # 1 for positive, 0 for negative sentiment

# Tokenization and sequence padding

Tokenizer = Tokenizer(num\_words=1000, oov\_token=’<OOV>’)

Tokenizer.fit\_on\_texts(reviews)

Sequences = tokenizer.texts\_to\_sequences(reviews)

Padded\_sequences = pad\_sequences(sequences, maxlen=20, padding=’post’, truncating=’post’)

# Define the neural network model

Model = Sequential([

Embedding(input\_dim=1000, output\_dim=16, input\_length=20),

Flatten(),

Dense(6, activation=’relu’),

Dense(1, activation=’sigmoid’)

])

# Compile the model

Model.compile(optimizer=’adam’, loss=’binary\_crossentropy’, metrics=[‘accuracy’])

# Train the model

Model.fit(padded\_sequences, labels, epochs=10, verbose=1)

# Test the model with new reviews

New\_reviews = [

“The best pizza in town!”,

“Awful experience, I wouldn’t recommend this place to anyone.”

]

New\_sequences = tokenizer.texts\_to\_sequences(new\_reviews)

New\_padded\_sequences = pad\_sequences(new\_sequences, maxlen=20, padding=’post’, truncating=’post’)

Predictions = model.predict(new\_padded\_sequences)

# Output predictions

For review, prediction in zip(new\_reviews, predictions):

Sentiment = “positive” if prediction > 0.5 else “negative”

Print(f”Review: {review}”)

Print(f”Predicted sentiment: {sentiment} (Confidence: {prediction[0]:.2f})”)

Print()

Output

Epoch 1/10

1/1 [==============================] – 2s 2s/step – loss: 0.6866 – accuracy: 0.7500

Epoch 2/10

1/1 [==============================] – 0s 9ms/step – loss: 0.6816 – accuracy: 0.7500

Epoch 3/10

1/1 [==============================] – 0s 9ms/step – loss: 0.6777 – accuracy: 0.7500

Epoch 4/10

1/1 [==============================] – 0s 13ms/step – loss: 0.6734 – accuracy: 1.0000

Epoch 5/10

1/1 [==============================] – 0s 12ms/step – loss: 0.6687 – accuracy: 1.0000

Epoch 6/10

1/1 [==============================] – 0s 11ms/step – loss: 0.6641 – accuracy: 1.0000

Epoch 7/10

1/1 [==============================] – 0s 12ms/step – loss: 0.6595 – accuracy: 1.0000

Epoch 8/10

1/1 [==============================] – 0s 11ms/step – loss: 0.6550 – accuracy: 1.0000

Epoch 9/10

1/1 [==============================] – 0s 13ms/step – loss: 0.6503 – accuracy: 1.0000

Epoch 10/10

1/1 [==============================] – 0s 14ms/step – loss: 0.6455 – accuracy: 1.0000

1/1 [==============================] – 0s 132ms/step

Review: The best pizza in town!

Predicted sentiment: negative (Confidence: 0.50)

Review: Awful experience, I wouldn’t recommend this place to anyone.

Predicted sentiment: positive (Confidence: 0.50)