Epoch 1/15

3363/3363 [==============================] - 8046s 2s/step - loss: 2.8471 - accuracy: 0.8020 - val\_loss: 0.4612 - val\_accuracy: 0.8467 - lr: 5.0000e-05

Epoch 2/15

3363/3363 [==============================] - 7687s 2s/step - loss: 0.2945 - accuracy: 0.8841 - val\_loss: 0.2798 - val\_accuracy: 0.8703 - lr: 5.0000e-05

Epoch 3/15

3363/3363 [==============================] - 7838s 2s/step - loss: 0.1745 - accuracy: 0.9385 - val\_loss: 0.3263 - val\_accuracy: 0.8647 - lr: 5.0000e-05

Epoch 4/15

3363/3363 [==============================] - 7954s 2s/step - loss: 0.0818 - accuracy: 0.9812 - val\_loss: 0.4737 - val\_accuracy: 0.8589 - lr: 5.0000e-05

Epoch 5/15

3363/3363 [==============================] - 7390s 2s/step - loss: 0.0289 - accuracy: 0.9968 - val\_loss: 0.6378 - val\_accuracy: 0.8580 - lr: 2.5000e-05

5765/5765 [==============================] - 226s 39ms/step

Evaluation Metrics:

Precision: 0.7297

Recall: 0.7866

F1 Score: 0.7571

ROC AUC: 0.9441

PR AUC: 0.8682

MCC: 0.6695

y\_pred = (test\_scores > 0.6).astype(int)

...: y\_true = y\_test\_augmented.astype(int)

...:

...: # Calculate evaluation metrics

...: precision = precision\_score(y\_true, y\_pred)

...: recall = recall\_score(y\_true, y\_pred)

...: f1 = f1\_score(y\_true, y\_pred)

...: roc\_auc = roc\_auc\_score(y\_true, test\_scores)

...: pr\_auc = average\_precision\_score(y\_true, test\_scores)

...: mcc = matthews\_corrcoef(y\_true, y\_pred)

...:

...: # Display evaluation metrics

...: print("\nEvaluation Metrics:")

...: print(f'Precision: {precision:.4f}')

...: print(f'Recall: {recall:.4f}')

...: print(f'F1 Score: {f1:.4f}')

...: print(f'ROC AUC: {roc\_auc:.4f}')

...: print(f'PR AUC: {pr\_auc:.4f}')

...: print(f'MCC: {mcc:.4f}')

...: y\_pred = (test\_scores > 0.7).astype(int)

...: y\_true = y\_test\_augmented.astype(int)

...:

...: # Calculate evaluation metrics

...: precision = precision\_score(y\_true, y\_pred)

...: recall = recall\_score(y\_true, y\_pred)

...: f1 = f1\_score(y\_true, y\_pred)

...: roc\_auc = roc\_auc\_score(y\_true, test\_scores)

...: pr\_auc = average\_precision\_score(y\_true, test\_scores)

...: mcc = matthews\_corrcoef(y\_true, y\_pred)

...:

...: # Display evaluation metrics

...: print("\nEvaluation Metrics:")

...: print(f'Precision: {precision:.4f}')

...: print(f'Recall: {recall:.4f}')

...: print(f'F1 Score: {f1:.4f}')

...: print(f'ROC AUC: {roc\_auc:.4f}')

...: print(f'PR AUC: {pr\_auc:.4f}')

...: print(f'MCC: {mcc:.4f}')

...:

Evaluation Metrics:

Precision: 0.8105

Recall: 0.6472

F1 Score: 0.7197

ROC AUC: 0.9441

PR AUC: 0.8682

MCC: 0.6435

Evaluation Metrics:

Precision: 0.9292

Recall: 0.5129

F1 Score: 0.6609

ROC AUC: 0.9441

PR AUC: 0.8682

MCC: 0.6253

Triplet 1 (Original):

Subject: https://ec.europa.eu/eurostat/NLP4StatRef/knowledge/hlth\_ehis\_aw1u, Predicate: https://ec.europa.eu/eurostat/NLP4StatRef/ontology/term, Object: hlth\_ehis\_aw1u

157/157 [==============================] - 7s 42ms/step

Intercept 0.2897839325963316

Prediction\_local [0.19331531]

Right: 0.03940978

Feature Importances (Coefficients):

Predicate: -0.05529742404446877

Subject: -0.0429766611105115

Object: 0.0018054642826329725

Triplet 2 (Original):

Subject: https://ec.europa.eu/eurostat/NLP4StatRef/ontology/ei\_qna, Predicate: http://www.w3.org/1999/02/22-rdf-syntax-ns#type, Object: https://ec.europa.eu/eurostat/NLP4StatRef/ontology/StatisticalData

157/157 [==============================] - 6s 41ms/step

Intercept 0.3244985004753219

Prediction\_local [0.0802612]

Right: 0.24980228

Feature Importances (Coefficients):

Object: -0.1636539103356179

Subject: -0.0647035151214535

Predicate: -0.01587987403418108

Triplet 3 (Original):

Subject: https://ec.europa.eu/eurostat/NLP4StatRef/knowledge/glossaryArticle118, Predicate: https://ec.europa.eu/eurostat/NLP4StatRef/ontology/hasReference, Object: https://ec.europa.eu/eurostat/NLP4StatRef/knowledge/referenceSource59

157/157 [==============================] - 7s 45ms/step

Intercept 0.2538785499229405

Prediction\_local [0.31313564]

Right: 0.29593956

Feature Importances (Coefficients):

Object: 0.047791532452570715

Subject: 0.021156560197298786

Predicate: -0.009690999306928329

Triplet 4 (Original):

Subject: https://ec.europa.eu/eurostat/NLP4StatRef/ontology/fats\_08, Predicate: https://ec.europa.eu/eurostat/NLP4StatRef/ontology/level, Object: 4

157/157 [==============================] - 7s 44ms/step

Intercept 0.22911392835759342

Prediction\_local [0.37568612]

Right: 0.058350872

Feature Importances (Coefficients):

Subject: 0.09610544832973483

Object: 0.05203968944504883

Predicate: -0.0015729489131452374

Triplet 5 (Original):

Subject: https://ec.europa.eu/eurostat/NLP4StatRef/knowledge/paragraph9574\_3455, Predicate: http://www.w3.org/1999/02/22-rdf-syntax-ns#type, Object: https://ec.europa.eu/eurostat/NLP4StatRef/ontology/Paragraph

157/157 [==============================] - 6s 41ms/step

Intercept 0.20106157475694791

Prediction\_local [0.34230282]

Right: 0.43056765

Feature Importances (Coefficients):

Object: 0.07471205471036282

Predicate: 0.046584139244226455

Subject: 0.019945048823323038