Epoch 1/15

1682/1682 [==============================] - 1335s 788ms/step - loss: 3.3250 - accuracy: 0.6335 - val\_loss: 0.5036 - val\_accuracy: 0.6864 - lr: 1.0000e-04

Epoch 2/15

1682/1682 [==============================] - 1344s 799ms/step - loss: 0.4540 - accuracy: 0.7295 - val\_loss: 0.4590 - val\_accuracy: 0.7107 - lr: 1.0000e-04

Epoch 3/15

1682/1682 [==============================] - 1333s 792ms/step - loss: 0.3628 - accuracy: 0.8090 - val\_loss: 0.4808 - val\_accuracy: 0.7272 - lr: 1.0000e-04

Epoch 4/15

1682/1682 [==============================] - 1239s 737ms/step - loss: 0.2739 - accuracy: 0.8701 - val\_loss: 0.5517 - val\_accuracy: 0.7340 - lr: 1.0000e-04

Epoch 5/15

1682/1682 [==============================] - 787s 468ms/step - loss: 0.1992 - accuracy: 0.9101 - val\_loss: 0.6166 - val\_accuracy: 0.7362 - lr: 7.0000e-05

2883/2883 [==============================] - 31s 11ms/step

Evaluation Metrics:

Precision: 0.7459

Recall: 0.6286

F1 Score: 0.6822

ROC AUC: 0.8247

PR AUC: 0.8450

MCC: 0.4196

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

...: y\_true = y\_test.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: 0.9015

Recall: 0.4693

F1 Score: 0.6172

ROC AUC: 0.8247

PR AUC: 0.8450

MCC: 0.4763

In [6]: y\_pred = (test\_scores > 0.7).astype(int)

...: y\_true = y\_test.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: 0.9663

Recall: 0.4271

F1 Score: 0.5924

ROC AUC: 0.8247

PR AUC: 0.8450

MCC: 0.4968

Triplet 1 (Original):

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

157/157 [==============================] - 2s 12ms/step

Intercept 0.43839136254401734

Prediction\_local [0.54023956]

Right: 0.56370986

Feature Importances (Coefficients):

Predicate: 0.10279301442320389

Object: -0.006644851212934154

Subject: 0.005700039162898417

Triplet 2 (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 [==============================] - 2s 11ms/step

Intercept 0.4427317372954558

Prediction\_local [0.48027351]

Right: 0.5063636

Feature Importances (Coefficients):

Object: 0.031387295643044974

Predicate: 0.005543501522590956

Subject: 0.0006109732412172223

Triplet 3 (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 [==============================] - 2s 11ms/step

Intercept 0.45208782788530255

Prediction\_local [0.44964356]

Right: 0.4835484

Feature Importances (Coefficients):

Object: -0.021112308006265193

Predicate: 0.02002638614365498

Subject: -0.001358346578638384

Triplet 4 (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 [==============================] - 2s 12ms/step

Intercept 0.47143765592724246

Prediction\_local [0.40431497]

Right: 0.48080847

Feature Importances (Coefficients):

Predicate: -0.06031577035254651

Object: -0.00635228455446742

Subject: -0.0004546261508156322

Triplet 5 (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 [==============================] - 2s 11ms/step

Intercept 0.44309612856106223

Prediction\_local [0.45924112]

Right: 0.52146304

Feature Importances (Coefficients):

Object: 0.04728764506026629

Predicate: -0.03382458886784167

Subject: 0.002681934148107735