2024-04-29 00:04:05.576864: I tensorflow/core/platform/cpu\_feature\_guard.cc:182] This TensorFlow binary is optimized to use available CPU instructions in performance-critical operations.

To enable the following instructions: SSE SSE2 SSE3 SSE4.1 SSE4.2 AVX AVX2 FMA, in other operations, rebuild TensorFlow with the appropriate compiler flags.

Epoch 1/15

1682/1682 [==============================] - 9547s 6s/step - loss: 4.3517 - accuracy: 0.6467 - val\_loss: 1.4599 - val\_accuracy: 0.6448 - lr: 5.0000e-05

Epoch 2/15

1682/1682 [==============================] - 8324s 5s/step - loss: 0.8858 - accuracy: 0.7220 - val\_loss: 0.6671 - val\_accuracy: 0.7073 - lr: 5.0000e-05

Epoch 3/15

1682/1682 [==============================] - 8931s 5s/step - loss: 0.5111 - accuracy: 0.7822 - val\_loss: 0.5904 - val\_accuracy: 0.6888 - lr: 5.0000e-05

Epoch 4/15

1682/1682 [==============================] - 8830s 5s/step - loss: 0.3825 - accuracy: 0.8484 - val\_loss: 0.6265 - val\_accuracy: 0.6880 - lr: 5.0000e-05

Epoch 5/15

1682/1682 [==============================] - 8834s 5s/step - loss: 0.2867 - accuracy: 0.8990 - val\_loss: 0.7645 - val\_accuracy: 0.6757 - lr: 5.0000e-05

Epoch 6/15

1682/1682 [==============================] - 8898s 5s/step - loss: 0.2207 - accuracy: 0.9309 - val\_loss: 0.8993 - val\_accuracy: 0.6830 - lr: 5.0000e-05

Epoch 7/15

1682/1682 [==============================] - 9629s 6s/step - loss: 0.1724 - accuracy: 0.9538 - val\_loss: 1.0247 - val\_accuracy: 0.6775 - lr: 5.0000e-05

2883/2883 [==============================] - 501s 174ms/step

Evaluation Metrics:

Precision: 0.7416

Recall: 0.5879

F1 Score: 0.6559

ROC AUC: 0.8096

PR AUC: 0.8336

MCC: 0.3915

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: 0.8770

Recall: 0.4993

F1 Score: 0.6363

ROC AUC: 0.8096

PR AUC: 0.8336

MCC: 0.4756

In [11]: 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: 0.9329

Recall: 0.4696

F1 Score: 0.6247

ROC AUC: 0.8096

PR AUC: 0.8336

MCC: 0.5021

Εικόνα που περιέχει κείμενο, στιγμιότυπο οθόνης, διάγραμμα, γραμμή

Περιγραφή που δημιουργήθηκε αυτόματα

Εικόνα που περιέχει κείμενο, στιγμιότυπο οθόνης, οθόνη, διάγραμμα

Περιγραφή που δημιουργήθηκε αυτόματα

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Περιγραφή που δημιουργήθηκε αυτόματα

Triplet 1 (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 [==============================] - 28s 178ms/step

Intercept 0.3030972369529333

Prediction\_local [0.49572345]

Right: 0.5149223

Feature Importances (Coefficients):

Predicate: 0.1603219441853307

Object: 0.03454737191197484

Subject: -0.0022431075194404176

Triplet 2 (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 [==============================] - 28s 176ms/step

Intercept 0.3524747704174022

Prediction\_local [0.45571651]

Right: 0.41639143

Feature Importances (Coefficients):

Predicate: 0.06094098159577943

Subject: 0.037228458506621334

Object: 0.005072303283539168

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 [==============================] - 41s 264ms/step

Intercept 0.46033312810898475

Prediction\_local [0.01547708]

Right: 0.05478966

Feature Importances (Coefficients):

Predicate: -0.3970828111155571

Object: -0.048966868935403404

Subject: 0.0011936281425034125

Triplet 4 (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 [==============================] - 29s 182ms/step

Intercept 0.3097116317570283

Prediction\_local [0.448108]

Right: 0.4274522

Feature Importances (Coefficients):

Predicate: 0.16032046437955813

Subject: -0.03170230127546641

Object: 0.009778200366026666

Triplet 5 (Original):

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

157/157 [==============================] - 28s 178ms/step

Intercept 0.3526442451196574

Prediction\_local [0.45254873]

Right: 0.43738955

Feature Importances (Coefficients):

Predicate: 0.0925523436836677

Object: 0.01572668494301609

Subject: -0.00837454243390947