Training on Fold 1

2024-04-21 19:52:26.559992: 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 1/20

1282/1282 [==============================] - ETA: 0s - loss: 17.5864 - accuracy: 0.51932024-04-21 20:18:36.518415: W tensorflow/tsl/framework/cpu\_allocator\_impl.cc:83] Allocation of 21018624000 exceeds 10% of free system memory.

2024-04-21 20:19:41.232133: W tensorflow/tsl/framework/cpu\_allocator\_impl.cc:83] Allocation of 21018624000 exceeds 10% of free system memory.

2024-04-21 20:20:00.222115: W tensorflow/tsl/framework/cpu\_allocator\_impl.cc:83] Allocation of 3698856000 exceeds 10% of free system memory.

2024-04-21 20:20:02.089829: W tensorflow/tsl/framework/cpu\_allocator\_impl.cc:83] Allocation of 2463498240 exceeds 10% of free system memory.

1282/1282 [==============================] - 1657s 1s/step - loss: 17.5864 - accuracy: 0.5193 - val\_loss: 12.0141 - val\_accuracy: 0.5585 - lr: 1.0000e-05

Epoch 2/20

1282/1282 [==============================] - ETA: 0s - loss: 8.4435 - accuracy: 0.62592024-04-21 20:46:02.266445: W tensorflow/tsl/framework/cpu\_allocator\_impl.cc:83] Allocation of 21018624000 exceeds 10% of free system memory.

1282/1282 [==============================] - 1617s 1s/step - loss: 8.4435 - accuracy: 0.6259 - val\_loss: 5.6121 - val\_accuracy: 0.6664 - lr: 1.0000e-05

Epoch 3/20

1282/1282 [==============================] - 1642s 1s/step - loss: 3.9048 - accuracy: 0.7126 - val\_loss: 2.6243 - val\_accuracy: 0.6678 - lr: 1.0000e-05

Epoch 4/20

1282/1282 [==============================] - 1573s 1s/step - loss: 1.8339 - accuracy: 0.7652 - val\_loss: 1.3664 - val\_accuracy: 0.6626 - lr: 1.0000e-05

Epoch 5/20

1282/1282 [==============================] - 1587s 1s/step - loss: 0.9509 - accuracy: 0.8032 - val\_loss: 0.8960 - val\_accuracy: 0.6535 - lr: 1.0000e-05

Epoch 6/20

1282/1282 [==============================] - 1563s 1s/step - loss: 0.5824 - accuracy: 0.8319 - val\_loss: 0.7379 - val\_accuracy: 0.6494 - lr: 1.0000e-05

Epoch 7/20

1282/1282 [==============================] - 1598s 1s/step - loss: 0.4229 - accuracy: 0.8532 - val\_loss: 0.7312 - val\_accuracy: 0.6409 - lr: 1.0000e-05

Epoch 8/20

1282/1282 [==============================] - 1547s 1s/step - loss: 0.3485 - accuracy: 0.8697 - val\_loss: 0.7653 - val\_accuracy: 0.6345 - lr: 1.0000e-05

Epoch 9/20

1282/1282 [==============================] - 1588s 1s/step - loss: 0.3069 - accuracy: 0.8849 - val\_loss: 0.8268 - val\_accuracy: 0.6284 - lr: 1.0000e-05

Epoch 10/20

1282/1282 [==============================] - 1650s 1s/step - loss: 0.2790 - accuracy: 0.8975 - val\_loss: 0.8888 - val\_accuracy: 0.6261 - lr: 1.0000e-05

Epoch 11/20

1282/1282 [==============================] - 1697s 1s/step - loss: 0.2567 - accuracy: 0.9088 - val\_loss: 0.9598 - val\_accuracy: 0.6173 - lr: 1.0000e-05

Epoch 12/20

1282/1282 [==============================] - ETA: 0s - loss: 0.2377 - accuracy: 0.9193

Epoch 12: ReduceLROnPlateau reducing learning rate to 5.999999848427251e-06.

1282/1282 [==============================] - 1723s 1s/step - loss: 0.2377 - accuracy: 0.9193 - val\_loss: 1.0403 - val\_accuracy: 0.6157 - lr: 1.0000e-05

Training on Fold 2

Epoch 1/20

1282/1282 [==============================] - 1648s 1s/step - loss: 17.6163 - accuracy: 0.5205 - val\_loss: 12.0342 - val\_accuracy: 0.5966 - lr: 1.0000e-05

Epoch 2/20

1282/1282 [==============================] - 1587s 1s/step - loss: 8.4555 - accuracy: 0.6311 - val\_loss: 5.6259 - val\_accuracy: 0.6616 - lr: 1.0000e-05

Epoch 3/20

1282/1282 [==============================] - 1585s 1s/step - loss: 3.9138 - accuracy: 0.7171 - val\_loss: 2.6365 - val\_accuracy: 0.6675 - lr: 1.0000e-05

Epoch 4/20

1282/1282 [==============================] - 1570s 1s/step - loss: 1.8297 - accuracy: 0.7696 - val\_loss: 1.3677 - val\_accuracy: 0.6600 - lr: 1.0000e-05

Epoch 5/20

1282/1282 [==============================] - 1578s 1s/step - loss: 0.9435 - accuracy: 0.8065 - val\_loss: 0.8898 - val\_accuracy: 0.6561 - lr: 1.0000e-05

Epoch 6/20

1282/1282 [==============================] - 1562s 1s/step - loss: 0.5779 - accuracy: 0.8345 - val\_loss: 0.7464 - val\_accuracy: 0.6456 - lr: 1.0000e-05

Epoch 7/20

1282/1282 [==============================] - 1575s 1s/step - loss: 0.4201 - accuracy: 0.8553 - val\_loss: 0.7302 - val\_accuracy: 0.6408 - lr: 1.0000e-05

Epoch 8/20

1282/1282 [==============================] - 1610s 1s/step - loss: 0.3461 - accuracy: 0.8715 - val\_loss: 0.7686 - val\_accuracy: 0.6365 - lr: 1.0000e-05

Epoch 9/20

1282/1282 [==============================] - 1564s 1s/step - loss: 0.3052 - accuracy: 0.8857 - val\_loss: 0.8304 - val\_accuracy: 0.6284 - lr: 1.0000e-05

Epoch 10/20

1282/1282 [==============================] - 1574s 1s/step - loss: 0.2781 - accuracy: 0.8983 - val\_loss: 0.8981 - val\_accuracy: 0.6267 - lr: 1.0000e-05

Epoch 11/20

1282/1282 [==============================] - 1578s 1s/step - loss: 0.2558 - accuracy: 0.9099 - val\_loss: 0.9496 - val\_accuracy: 0.6176 - lr: 1.0000e-05

Epoch 12/20

1282/1282 [==============================] - ETA: 0s - loss: 0.2367 - accuracy: 0.9197

Epoch 12: ReduceLROnPlateau reducing learning rate to 5.999999848427251e-06.

1282/1282 [==============================] - 1623s 1s/step - loss: 0.2367 - accuracy: 0.9197 - val\_loss: 1.0454 - val\_accuracy: 0.6124 - lr: 1.0000e-05

Training on Fold 3

Epoch 1/20

1282/1282 [==============================] - 1628s 1s/step - loss: 17.6110 - accuracy: 0.5230 - val\_loss: 12.0358 - val\_accuracy: 0.6119 - lr: 1.0000e-05

Epoch 2/20

1282/1282 [==============================] - 1622s 1s/step - loss: 8.4629 - accuracy: 0.6286 - val\_loss: 5.6278 - val\_accuracy: 0.6626 - lr: 1.0000e-05

Epoch 3/20

1282/1282 [==============================] - 1598s 1s/step - loss: 3.9183 - accuracy: 0.7132 - val\_loss: 2.6371 - val\_accuracy: 0.6655 - lr: 1.0000e-05

Epoch 4/20

1282/1282 [==============================] - 1546s 1s/step - loss: 1.8346 - accuracy: 0.7658 - val\_loss: 1.3646 - val\_accuracy: 0.6627 - lr: 1.0000e-05

Epoch 5/20

1282/1282 [==============================] - 1576s 1s/step - loss: 0.9472 - accuracy: 0.8043 - val\_loss: 0.8887 - val\_accuracy: 0.6561 - lr: 1.0000e-05

Epoch 6/20

1282/1282 [==============================] - 1559s 1s/step - loss: 0.5801 - accuracy: 0.8318 - val\_loss: 0.7377 - val\_accuracy: 0.6482 - lr: 1.0000e-05

Epoch 7/20

1282/1282 [==============================] - 1555s 1s/step - loss: 0.4220 - accuracy: 0.8533 - val\_loss: 0.7134 - val\_accuracy: 0.6435 - lr: 1.0000e-05

Epoch 8/20

1282/1282 [==============================] - 1579s 1s/step - loss: 0.3472 - accuracy: 0.8699 - val\_loss: 0.7434 - val\_accuracy: 0.6396 - lr: 1.0000e-05

Epoch 9/20

1282/1282 [==============================] - 1572s 1s/step - loss: 0.3067 - accuracy: 0.8840 - val\_loss: 0.8051 - val\_accuracy: 0.6305 - lr: 1.0000e-05

Epoch 10/20

1282/1282 [==============================] - 1603s 1s/step - loss: 0.2790 - accuracy: 0.8963 - val\_loss: 0.8891 - val\_accuracy: 0.6252 - lr: 1.0000e-05

Epoch 11/20

1282/1282 [==============================] - 1596s 1s/step - loss: 0.2567 - accuracy: 0.9081 - val\_loss: 0.9547 - val\_accuracy: 0.6190 - lr: 1.0000e-05

Epoch 12/20

1282/1282 [==============================] - ETA: 0s - loss: 0.2374 - accuracy: 0.9184

Epoch 12: ReduceLROnPlateau reducing learning rate to 5.999999848427251e-06.

1282/1282 [==============================] - 1570s 1s/step - loss: 0.2374 - accuracy: 0.9184 - val\_loss: 1.0275 - val\_accuracy: 0.6160 - lr: 1.0000e-05

3844/3844 [==============================] - 51s 13ms/step

Test Metrics:

Precision: 0.6443

Recall: 0.6352

F1 Score: 0.6397

ROC AUC: 0.7596

PR AUC: 0.7969

MCC: 0.2845

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

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

...:

...: # Calculate and display evaluation metrics for the test set

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

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

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

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

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

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

...:

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

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

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

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

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

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

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

...:

Test Metrics:

Precision: 0.6681

Recall: 0.5851

F1 Score: 0.6238

ROC AUC: 0.7596

PR AUC: 0.7969

MCC: 0.2967

In [12]: y\_test\_pred = (test\_scores > 0.7).astype(int)

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

...:

...: # Calculate and display evaluation metrics for the test set

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

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

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

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

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

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

...:

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

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

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

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

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

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

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

...:

Test Metrics:

Precision: 0.7015

Recall: 0.5367

F1 Score: 0.6081

ROC AUC: 0.7596

PR AUC: 0.7969

MCC: 0.3172

Εικόνα που περιέχει κείμενο, στιγμιότυπο οθόνης, οθόνη, διάγραμμα

Περιγραφή που δημιουργήθηκε αυτόματα

Εικόνα που περιέχει κείμενο, γράφημα, διάγραμμα, γραμμή

Περιγραφή που δημιουργήθηκε αυτόματα

Εικόνα που περιέχει κείμενο, στιγμιότυπο οθόνης, διάγραμμα, ορθογώνιο παραλληλόγραμμο

Περιγραφή που δημιουργήθηκε αυτόματα

Εικόνα που περιέχει κείμενο, γραμμή, διάγραμμα, γράφημα

Περιγραφή που δημιουργήθηκε αυτόματα

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