Training on Fold 1

2024-04-21 13:20:17.361260: 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

961/961 [==============================] - ETA: 0s - loss: 19.0489 - accuracy: 0.50162024-04-21 13:27:18.679352: W tensorflow/tsl/framework/cpu\_allocator\_impl.cc:83] Allocation of 10509312000 exceeds 10% of free system memory.

2024-04-21 13:27:23.850366: W tensorflow/tsl/framework/cpu\_allocator\_impl.cc:83] Allocation of 2463498240 exceeds 10% of free system memory.

961/961 [==============================] - 428s 442ms/step - loss: 19.0489 - accuracy: 0.5016 - val\_loss: 14.3877 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 2/20

961/961 [==============================] - ETA: 0s - loss: 11.0916 - accuracy: 0.49992024-04-21 13:34:23.843845: W tensorflow/tsl/framework/cpu\_allocator\_impl.cc:83] Allocation of 10509312000 exceeds 10% of free system memory.

2024-04-21 13:34:27.845107: W tensorflow/tsl/framework/cpu\_allocator\_impl.cc:83] Allocation of 2463498240 exceeds 10% of free system memory.

961/961 [==============================] - 424s 441ms/step - loss: 11.0916 - accuracy: 0.4999 - val\_loss: 8.3076 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 3/20

961/961 [==============================] - ETA: 0s - loss: 6.3544 - accuracy: 0.50062024-04-21 13:41:29.567268: W tensorflow/tsl/framework/cpu\_allocator\_impl.cc:83] Allocation of 10509312000 exceeds 10% of free system memory.

961/961 [==============================] - 426s 443ms/step - loss: 6.3544 - accuracy: 0.5006 - val\_loss: 4.7222 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 4/20

961/961 [==============================] - 424s 442ms/step - loss: 3.6128 - accuracy: 0.4993 - val\_loss: 2.7046 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 5/20

961/961 [==============================] - 425s 442ms/step - loss: 2.1160 - accuracy: 0.5000 - val\_loss: 1.6463 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 6/20

961/961 [==============================] - 424s 441ms/step - loss: 1.3562 - accuracy: 0.4995 - val\_loss: 1.1290 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 7/20

961/961 [==============================] - 424s 442ms/step - loss: 0.9919 - accuracy: 0.4977 - val\_loss: 0.8851 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 8/20

961/961 [==============================] - 423s 440ms/step - loss: 0.8212 - accuracy: 0.4991 - val\_loss: 0.7719 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 9/20

961/961 [==============================] - 423s 440ms/step - loss: 0.7434 - accuracy: 0.4993 - val\_loss: 0.7218 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 10/20

961/961 [==============================] - 424s 441ms/step - loss: 0.7100 - accuracy: 0.5007 - val\_loss: 0.7015 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 11/20

961/961 [==============================] - 425s 442ms/step - loss: 0.6974 - accuracy: 0.4997 - val\_loss: 0.6947 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 12/20

961/961 [==============================] - 422s 439ms/step - loss: 0.6938 - accuracy: 0.4986 - val\_loss: 0.6933 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 13/20

961/961 [==============================] - 424s 441ms/step - loss: 0.6932 - accuracy: 0.4978 - val\_loss: 0.6932 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 14/20

961/961 [==============================] - 423s 440ms/step - loss: 0.6931 - accuracy: 0.4996 - val\_loss: 0.6931 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 15/20

961/961 [==============================] - 423s 440ms/step - loss: 0.6931 - accuracy: 0.4993 - val\_loss: 0.6931 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 16/20

961/961 [==============================] - 436s 454ms/step - loss: 0.6931 - accuracy: 0.4982 - val\_loss: 0.6931 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 17/20

961/961 [==============================] - 465s 484ms/step - loss: 0.6931 - accuracy: 0.4996 - val\_loss: 0.6932 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 18/20

961/961 [==============================] - ETA: 0s - loss: 0.6931 - accuracy: 0.4996

Epoch 18: ReduceLROnPlateau reducing learning rate to 5.999999848427251e-06.

961/961 [==============================] - 465s 483ms/step - loss: 0.6931 - accuracy: 0.4996 - val\_loss: 0.6931 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 19/20

961/961 [==============================] - 470s 489ms/step - loss: 0.6931 - accuracy: 0.4994 - val\_loss: 0.6931 - val\_accuracy: 0.5000 - lr: 6.0000e-06

Epoch 20/20

961/961 [==============================] - 469s 488ms/step - loss: 0.6931 - accuracy: 0.4978 - val\_loss: 0.6931 - val\_accuracy: 0.5000 - lr: 6.0000e-06

Training on Fold 2

Epoch 1/20

961/961 [==============================] - 468s 484ms/step - loss: 19.0498 - accuracy: 0.5003 - val\_loss: 14.3876 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 2/20

961/961 [==============================] - 469s 488ms/step - loss: 11.0911 - accuracy: 0.4992 - val\_loss: 8.3070 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 3/20

961/961 [==============================] - 461s 480ms/step - loss: 6.3537 - accuracy: 0.4990 - val\_loss: 4.7215 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 4/20

961/961 [==============================] - 449s 467ms/step - loss: 3.6122 - accuracy: 0.4989 - val\_loss: 2.7041 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 5/20

961/961 [==============================] - 455s 473ms/step - loss: 2.1157 - accuracy: 0.4982 - val\_loss: 1.6461 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 6/20

961/961 [==============================] - 456s 475ms/step - loss: 1.3561 - accuracy: 0.4980 - val\_loss: 1.1289 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 7/20

961/961 [==============================] - 448s 466ms/step - loss: 0.9920 - accuracy: 0.4993 - val\_loss: 0.8852 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 8/20

961/961 [==============================] - 455s 473ms/step - loss: 0.8213 - accuracy: 0.5001 - val\_loss: 0.7720 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 9/20

961/961 [==============================] - 445s 463ms/step - loss: 0.7434 - accuracy: 0.5006 - val\_loss: 0.7219 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 10/20

961/961 [==============================] - 435s 453ms/step - loss: 0.7101 - accuracy: 0.4990 - val\_loss: 0.7015 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 11/20

961/961 [==============================] - 444s 462ms/step - loss: 0.6974 - accuracy: 0.4990 - val\_loss: 0.6948 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 12/20

961/961 [==============================] - 463s 482ms/step - loss: 0.6938 - accuracy: 0.4972 - val\_loss: 0.6933 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 13/20

961/961 [==============================] - 471s 490ms/step - loss: 0.6932 - accuracy: 0.4993 - val\_loss: 0.6932 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 14/20

961/961 [==============================] - 471s 490ms/step - loss: 0.6931 - accuracy: 0.5002 - val\_loss: 0.6931 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 15/20

961/961 [==============================] - 477s 496ms/step - loss: 0.6931 - accuracy: 0.5003 - val\_loss: 0.6932 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 16/20

961/961 [==============================] - 464s 483ms/step - loss: 0.6931 - accuracy: 0.5000 - val\_loss: 0.6931 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 17/20

961/961 [==============================] - 478s 498ms/step - loss: 0.6931 - accuracy: 0.5009 - val\_loss: 0.6932 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 18/20

961/961 [==============================] - ETA: 0s - loss: 0.6931 - accuracy: 0.4993

Epoch 18: ReduceLROnPlateau reducing learning rate to 5.999999848427251e-06.

961/961 [==============================] - 477s 496ms/step - loss: 0.6931 - accuracy: 0.4993 - val\_loss: 0.6931 - val\_accuracy: 0.5000 - lr: 1.0000e-05

Epoch 19/20

961/961 [==============================] - 477s 496ms/step - loss: 0.6931 - accuracy: 0.5008 - val\_loss: 0.6931 - val\_accuracy: 0.5000 - lr: 6.0000e-06

Epoch 20/20

961/961 [==============================] - 466s 485ms/step - loss: 0.6931 - accuracy: 0.4999 - val\_loss: 0.6932 - val\_accuracy: 0.5000 - lr: 6.0000e-06

3844/3844 [==============================] - 33s 9ms/step

Test Metrics:

Precision: 0.5000

Recall: 1.0000

F1 Score: 0.6667

ROC AUC: 0.5000

PR AUC: 0.5000

MCC: 0.0000

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}')

...:

C:\Users\skape\PycharmProjects\Thesis\_tensorflow\.venv\lib\site-packages\sklearn\metrics\\_classification.py:1471: UndefinedMetricWarning: Precision is ill-defined and being set to 0.0 due to no predicted samples. Use `zero\_division` parameter to control this behavior.

\_warn\_prf(average, modifier, msg\_start, len(result))

Test Metrics:

Precision: 0.0000

Recall: 0.0000

F1 Score: 0.0000

ROC AUC: 0.5000

PR AUC: 0.5000

MCC: 0.0000

In [5]: 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}')

...:

C:\Users\skape\PycharmProjects\Thesis\_tensorflow\.venv\lib\site-packages\sklearn\metrics\\_classification.py:1471: UndefinedMetricWarning: Precision is ill-defined and being set to 0.0 due to no predicted samples. Use `zero\_division` parameter to control this behavior.

\_warn\_prf(average, modifier, msg\_start, len(result))

Test Metrics:

Precision: 0.0000

Recall: 0.0000

F1 Score: 0.0000

ROC AUC: 0.5000

PR AUC: 0.5000

MCC: 0.0000

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

Περιγραφή που δημιουργήθηκε αυτόματα

Εικόνα που περιέχει κείμενο, γραμμή, γράφημα, διάγραμμα

Περιγραφή που δημιουργήθηκε αυτόματα

Εικόνα που περιέχει κείμενο, στιγμιότυπο οθόνης, διάγραμμα, λογισμικό

Περιγραφή που δημιουργήθηκε αυτόματα

Εικόνα που περιέχει κείμενο, γραμμή, γράφημα, στιγμιότυπο οθόνης

Περιγραφή που δημιουργήθηκε αυτόματα

Εικόνα που περιέχει κείμενο, διάγραμμα, στιγμιότυπο οθόνης, γράφημα

Περιγραφή που δημιουργήθηκε αυτόματα