Epoch 1/20

1682/1682 [==============================] - ETA: 0s - loss: 17.8861 - accuracy: 0.50342024-04-15 17:31:06.021865: W tensorflow/tsl/framework/cpu\_allocator\_impl.cc:83] Allocation of 10509312000 exceeds 10% of free system memory.

2024-04-15 17:31:11.525899: W tensorflow/tsl/framework/cpu\_allocator\_impl.cc:83] Allocation of 2463498240 exceeds 10% of free system memory.

1682/1682 [==============================] - 751s 444ms/step - loss: 17.8861 - accuracy: 0.5034 - val\_loss: 12.0322 - val\_accuracy: 0.5254 - lr: 1.0000e-05

Epoch 2/20

1682/1682 [==============================] - ETA: 0s - loss: 8.0917 - accuracy: 0.51672024-04-15 17:43:44.913161: W tensorflow/tsl/framework/cpu\_allocator\_impl.cc:83] Allocation of 10509312000 exceeds 10% of free system memory.

2024-04-15 17:43:49.617800: W tensorflow/tsl/framework/cpu\_allocator\_impl.cc:83] Allocation of 2463498240 exceeds 10% of free system memory.

1682/1682 [==============================] - 759s 451ms/step - loss: 8.0917 - accuracy: 0.5167 - val\_loss: 4.9843 - val\_accuracy: 0.5316 - lr: 1.0000e-05

Epoch 3/20

1682/1682 [==============================] - ETA: 0s - loss: 3.2241 - accuracy: 0.54272024-04-15 17:56:22.357742: W tensorflow/tsl/framework/cpu\_allocator\_impl.cc:83] Allocation of 10509312000 exceeds 10% of free system memory.

1682/1682 [==============================] - 757s 450ms/step - loss: 3.2241 - accuracy: 0.5427 - val\_loss: 1.9592 - val\_accuracy: 0.5445 - lr: 1.0000e-05

Epoch 4/20

1682/1682 [==============================] - 768s 457ms/step - loss: 1.3711 - accuracy: 0.5701 - val\_loss: 0.9881 - val\_accuracy: 0.5580 - lr: 1.0000e-05

Epoch 5/20

1682/1682 [==============================] - 760s 452ms/step - loss: 0.8305 - accuracy: 0.5852 - val\_loss: 0.7389 - val\_accuracy: 0.5629 - lr: 1.0000e-05

Epoch 6/20

1682/1682 [==============================] - 741s 441ms/step - loss: 0.6931 - accuracy: 0.6051 - val\_loss: 0.6837 - val\_accuracy: 0.5581 - lr: 1.0000e-05

Epoch 7/20

1682/1682 [==============================] - 741s 441ms/step - loss: 0.6541 - accuracy: 0.6256 - val\_loss: 0.6768 - val\_accuracy: 0.5546 - lr: 1.0000e-05

Epoch 8/20

1682/1682 [==============================] - 734s 436ms/step - loss: 0.6322 - accuracy: 0.6486 - val\_loss: 0.6822 - val\_accuracy: 0.5539 - lr: 1.0000e-05

Epoch 9/20

1682/1682 [==============================] - 723s 430ms/step - loss: 0.6095 - accuracy: 0.6738 - val\_loss: 0.6981 - val\_accuracy: 0.5506 - lr: 1.0000e-05

Epoch 10/20

1682/1682 [==============================] - 724s 431ms/step - loss: 0.5824 - accuracy: 0.7005 - val\_loss: 0.7165 - val\_accuracy: 0.5563 - lr: 1.0000e-05

Epoch 11/20

1682/1682 [==============================] - 728s 433ms/step - loss: 0.5492 - accuracy: 0.7296 - val\_loss: 0.7402 - val\_accuracy: 0.5576 - lr: 1.0000e-05

Epoch 12/20

1682/1682 [==============================] - ETA: 0s - loss: 0.5141 - accuracy: 0.7584

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

1682/1682 [==============================] - 723s 430ms/step - loss: 0.5141 - accuracy: 0.7584 - val\_loss: 0.7718 - val\_accuracy: 0.5624 - lr: 1.0000e-05

2883/2883 [==============================] - 28s 10ms/step

Evaluation Metrics:

Precision: 0.5394

Recall: 0.7512

F1 Score: 0.6279

ROC AUC: 0.6056

PR AUC: 0.5932

MCC: 0.1196

In [3]: 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)

...:

...: # Confusion Matrix

...: conf\_matrix = confusion\_matrix(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: 0.6542

Recall: 0.2832

F1 Score: 0.3952

ROC AUC: 0.6056

PR AUC: 0.5932

MCC: 0.1621

In [4]: 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)

...:

...: # Confusion Matrix

...: conf\_matrix = confusion\_matrix(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: 0.6745

Recall: 0.0785

F1 Score: 0.1406

ROC AUC: 0.6056

PR AUC: 0.5932

MCC: 0.0867

Εικόνα που περιέχει κείμενο, διάγραμμα, γράφημα, γραμμή

Περιγραφή που δημιουργήθηκε αυτόματα

Εικόνα που περιέχει γραμμή, διάγραμμα, γράφημα, στιγμιότυπο οθόνης

Περιγραφή που δημιουργήθηκε αυτόματα

Εικόνα που περιέχει κείμενο, διάγραμμα, γράφημα, γραμμή

Περιγραφή που δημιουργήθηκε αυτόματα

Εικόνα που περιέχει κείμενο, στιγμιότυπο οθόνης, σχεδίαση

Περιγραφή που δημιουργήθηκε αυτόματα

Εικόνα που περιέχει κείμενο, στιγμιότυπο οθόνης, πολυχρωμία, διάγραμμα

Περιγραφή που δημιουργήθηκε αυτόματα