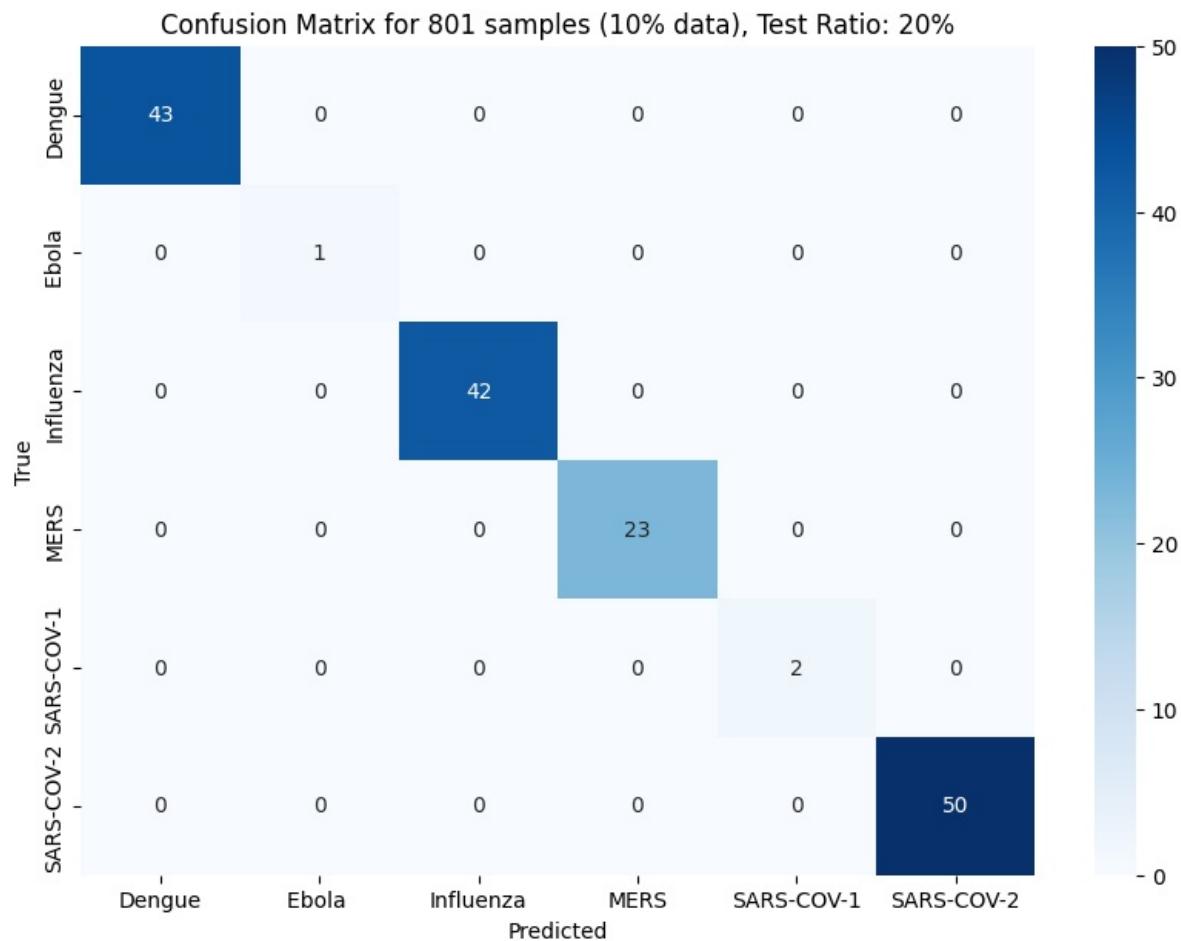


Consolidated Hybrid Model Evaluation Report

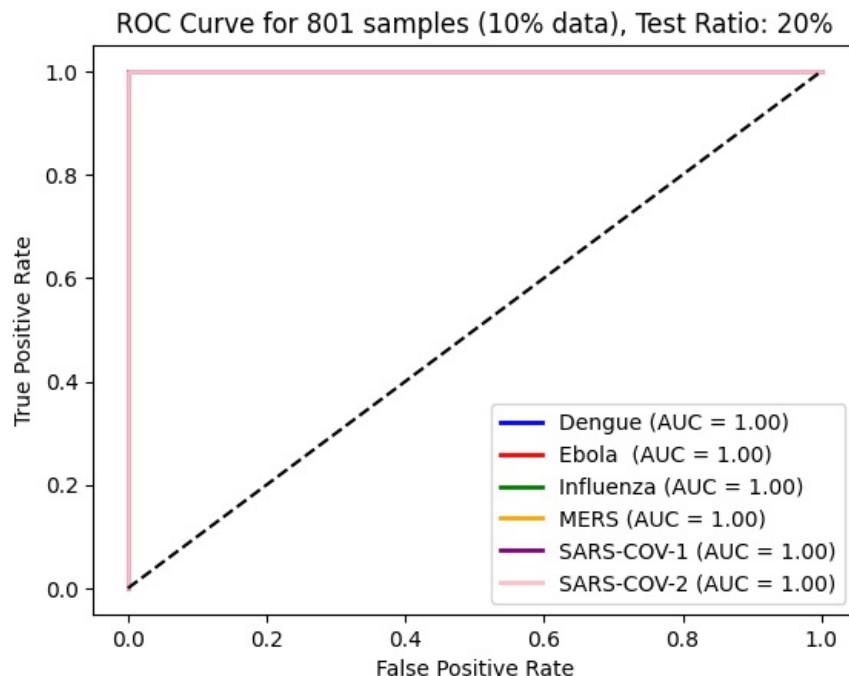
Data Size: 801 samples, Test Ratio: 0.2

- Accuracy: 1.0000
- Precision: 1.0000
- Recall: 1.0000
- F1_score: 1.0000

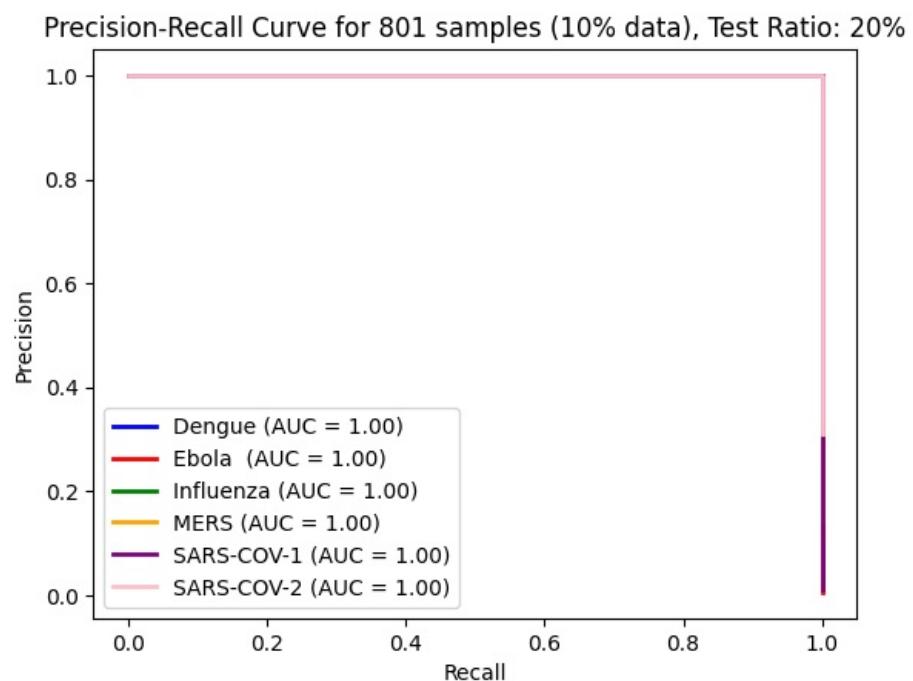
Confusion Matrix for 801 samples (10% data), Test Ratio: 20%



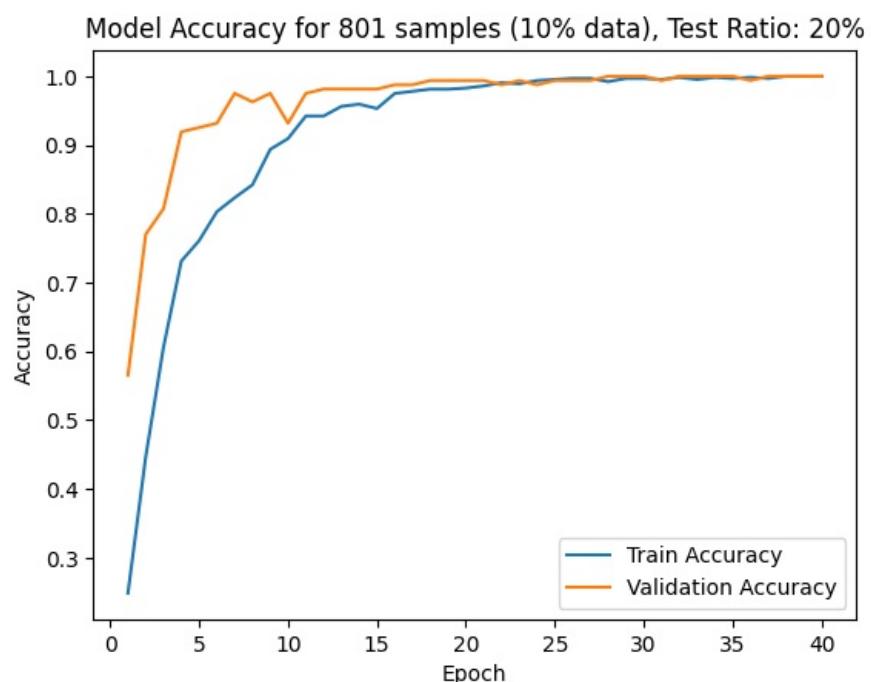
ROC Curve for 801 samples (10% data), Test Ratio: 20%



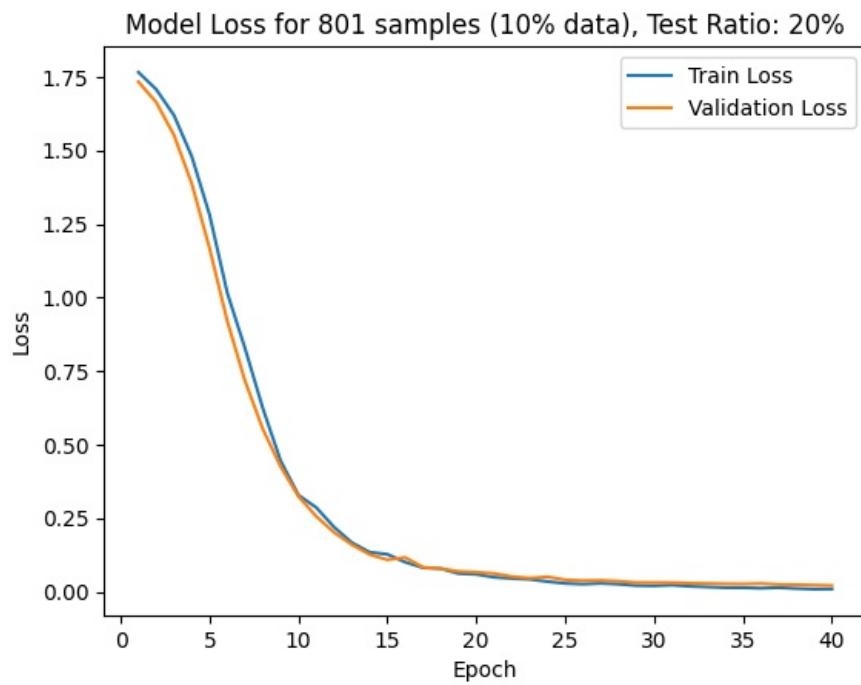
Precision-Recall Curve for 801 samples (10% data), Test Ratio: 20%



Model Accuracy for 801 samples (10% data), Test Ratio: 20%



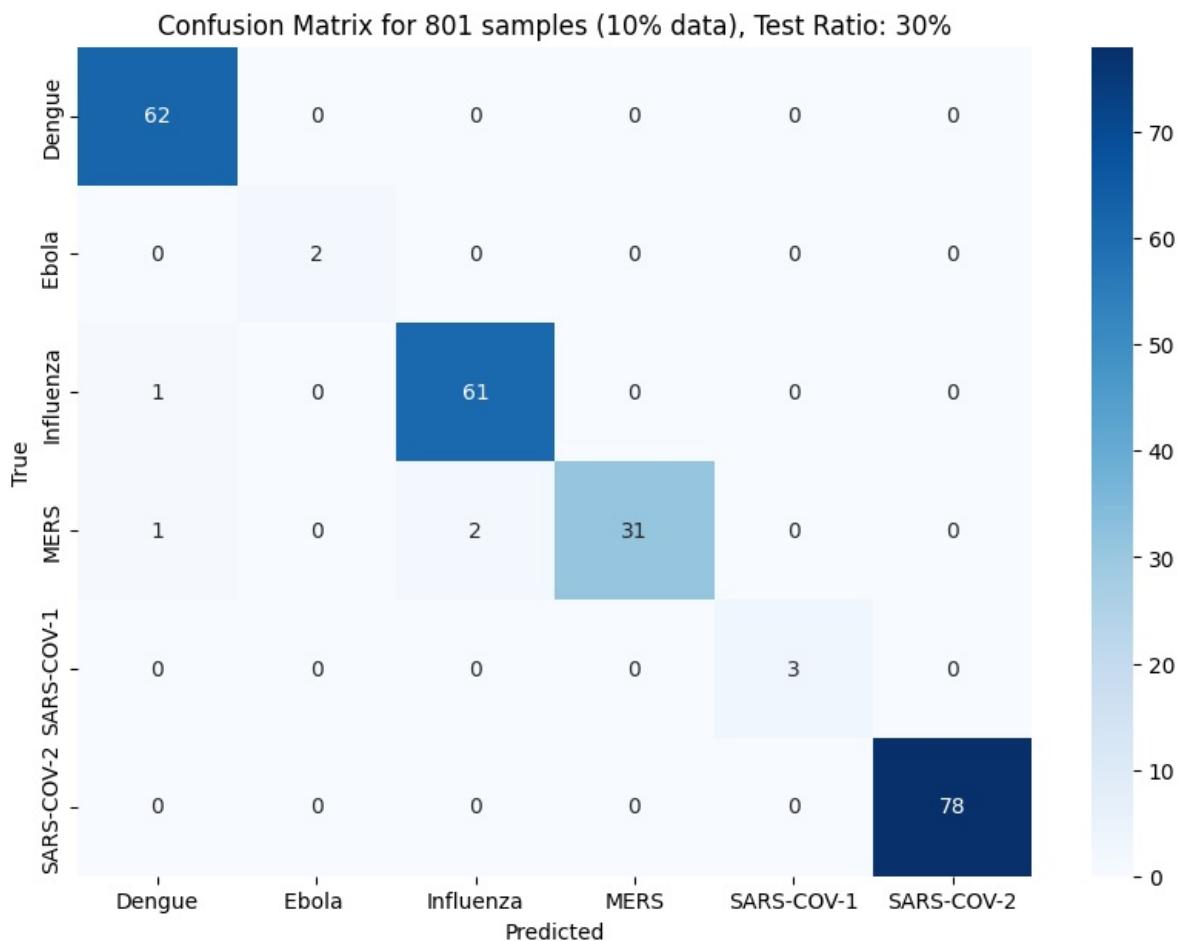
Model Loss for 801 samples (10% data), Test Ratio: 20%



Data Size: 801 samples, Test Ratio: 0.3

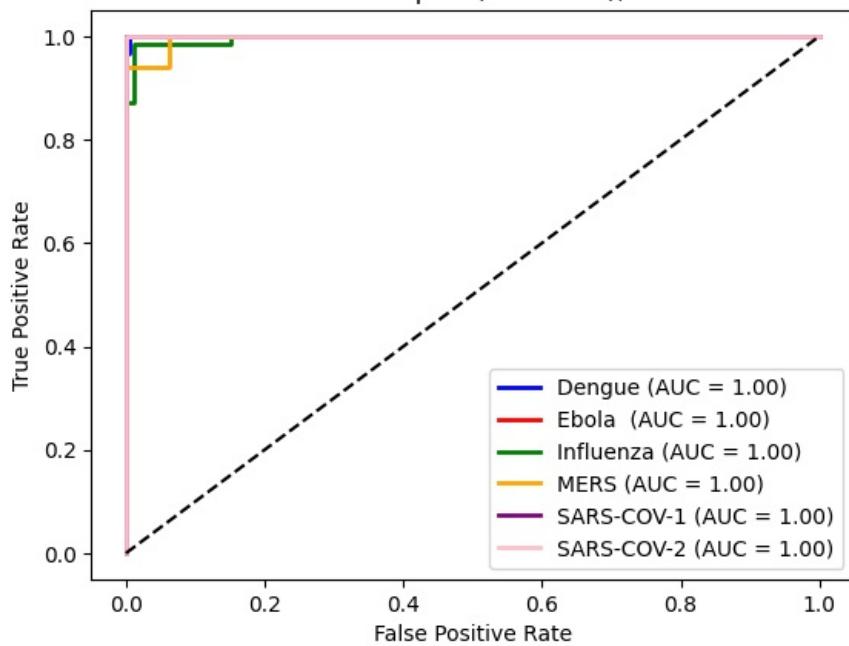
- Accuracy: 0.9834
- Precision: 0.9895
- Recall: 0.9826
- F1_score: 0.9857

Confusion Matrix for 801 samples (10% data), Test Ratio: 30%

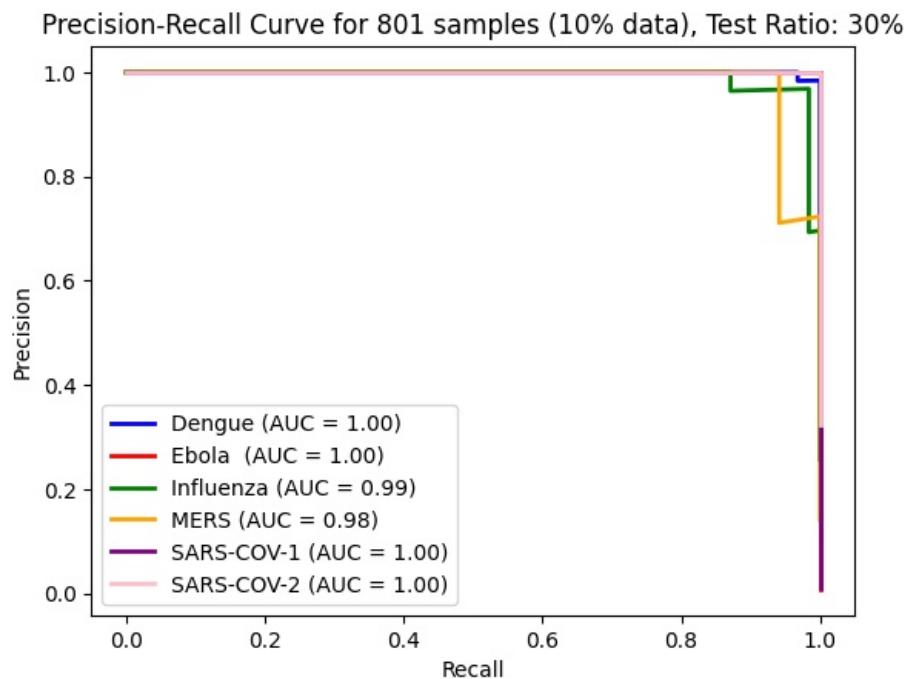


ROC Curve for 801 samples (10% data), Test Ratio: 30%

ROC Curve for 801 samples (10% data), Test Ratio: 30%

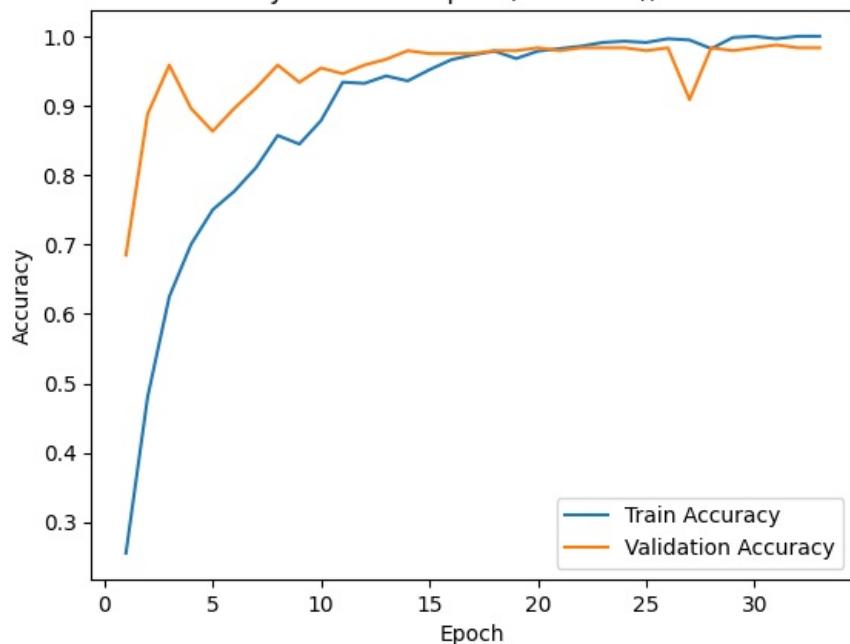


Precision-Recall Curve for 801 samples (10% data), Test Ratio: 30%

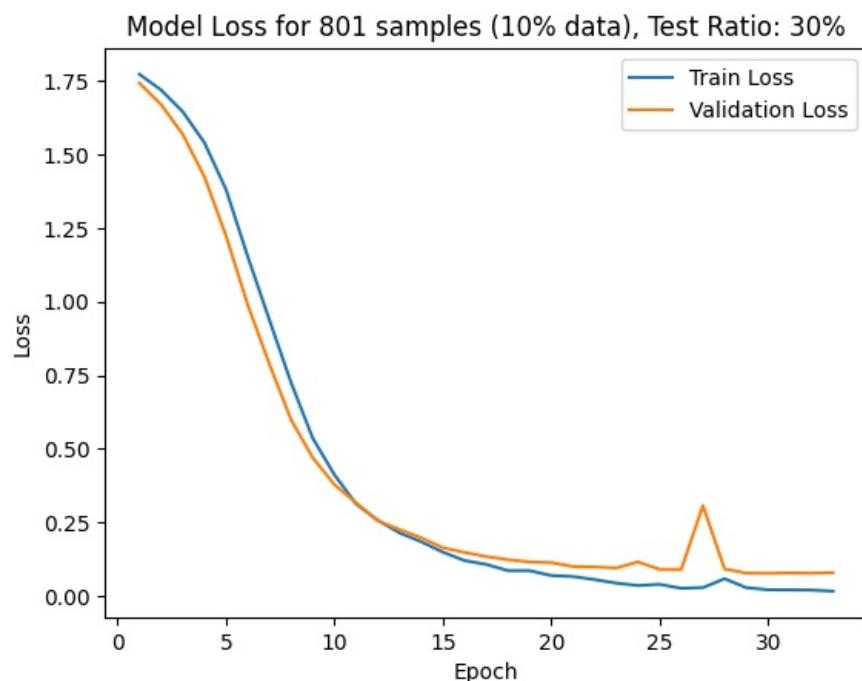


Model Accuracy for 801 samples (10% data), Test Ratio: 30%

Model Accuracy for 801 samples (10% data), Test Ratio: 30%



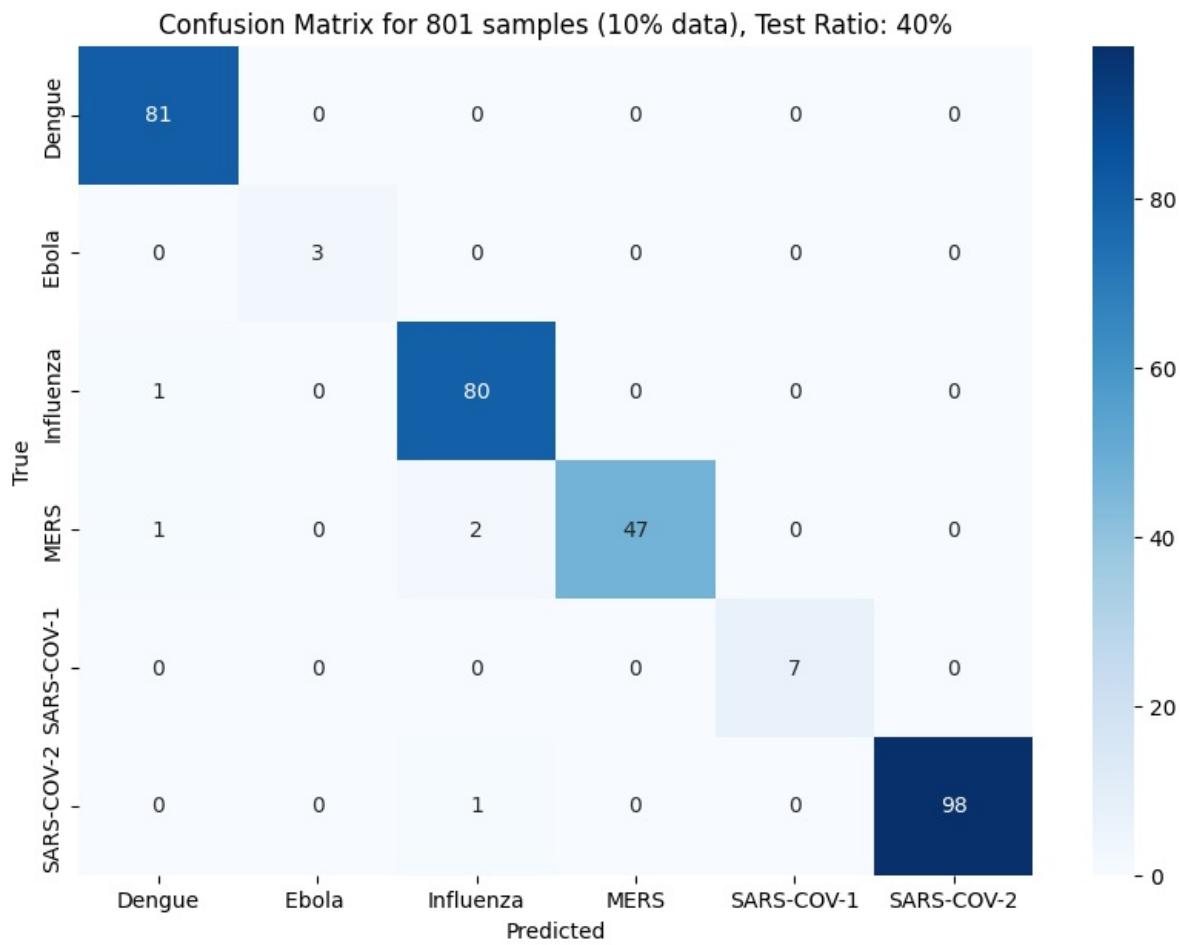
Model Loss for 801 samples (10% data), Test Ratio: 30%



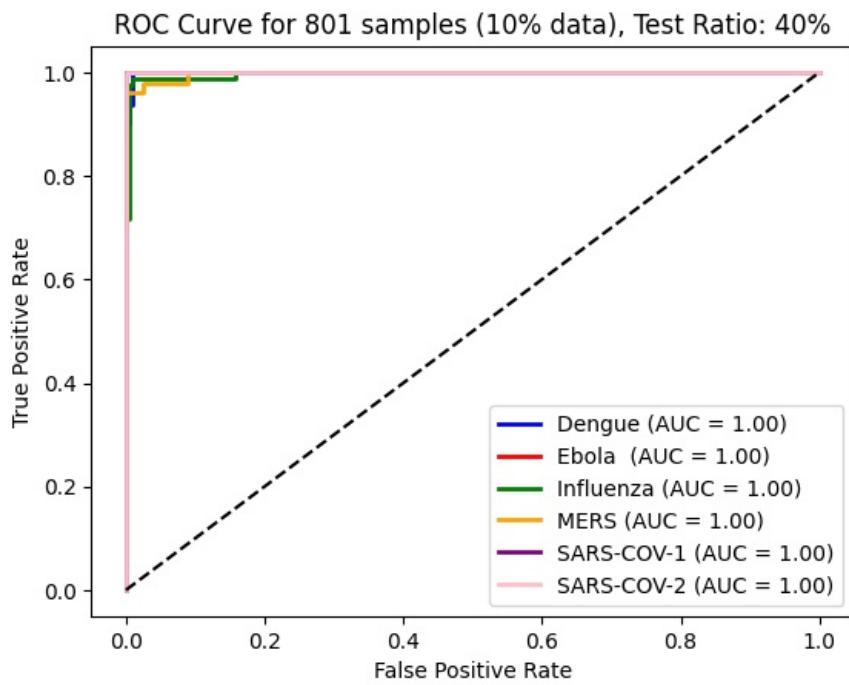
Data Size: 801 samples, Test Ratio: 0.4

- Accuracy: 0.9844
- Precision: 0.9900
- Recall: 0.9863
- F1_score: 0.9879

Confusion Matrix for 801 samples (10% data), Test Ratio: 40%

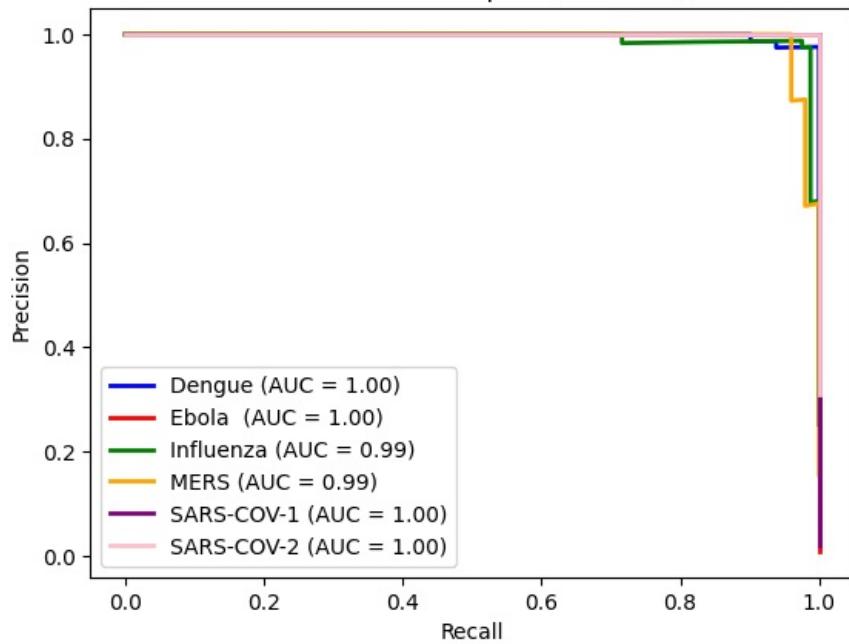


ROC Curve for 801 samples (10% data), Test Ratio: 40%

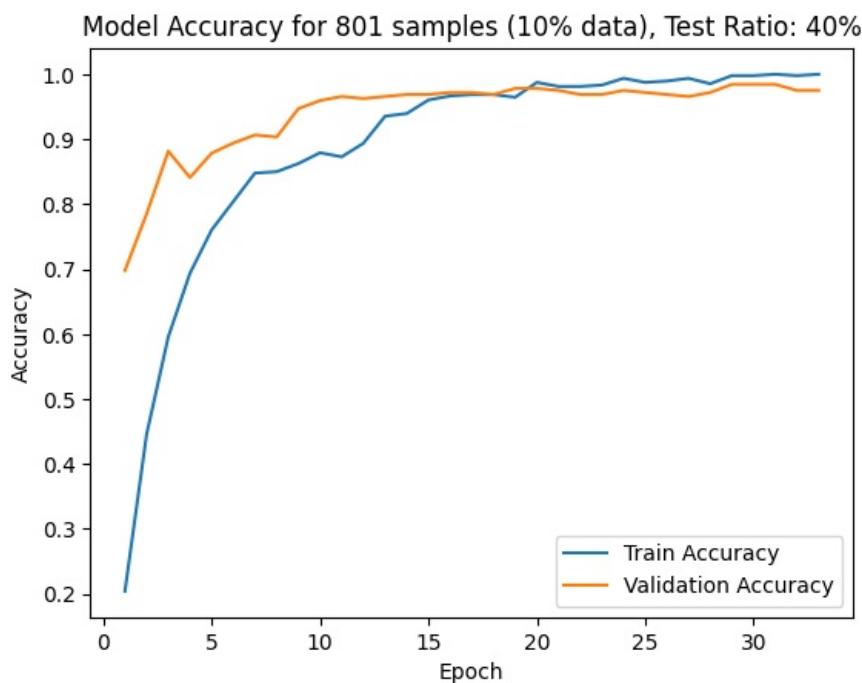


Precision-Recall Curve for 801 samples (10% data), Test Ratio: 40%

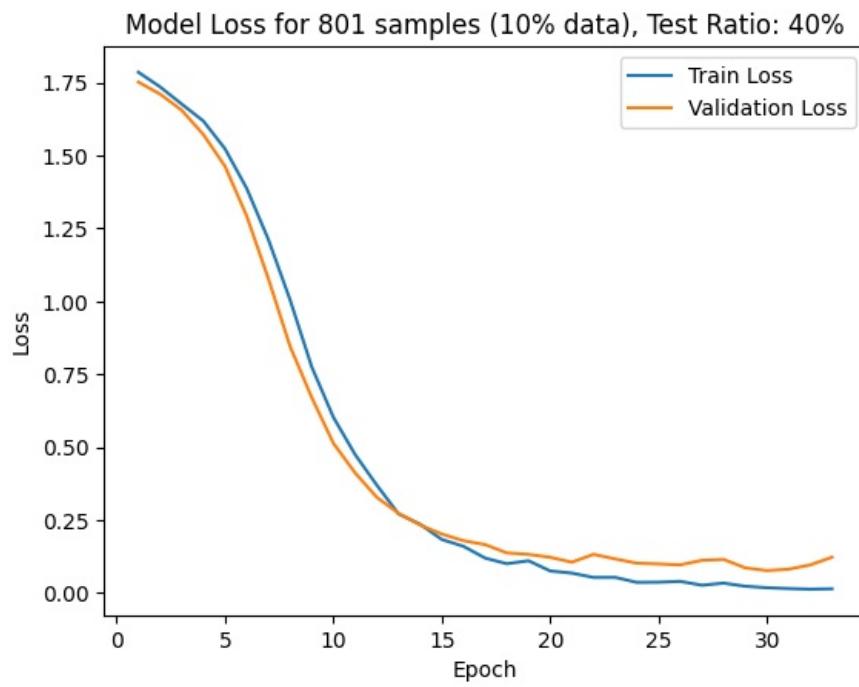
Precision-Recall Curve for 801 samples (10% data), Test Ratio: 40%



Model Accuracy for 801 samples (10% data), Test Ratio: 40%



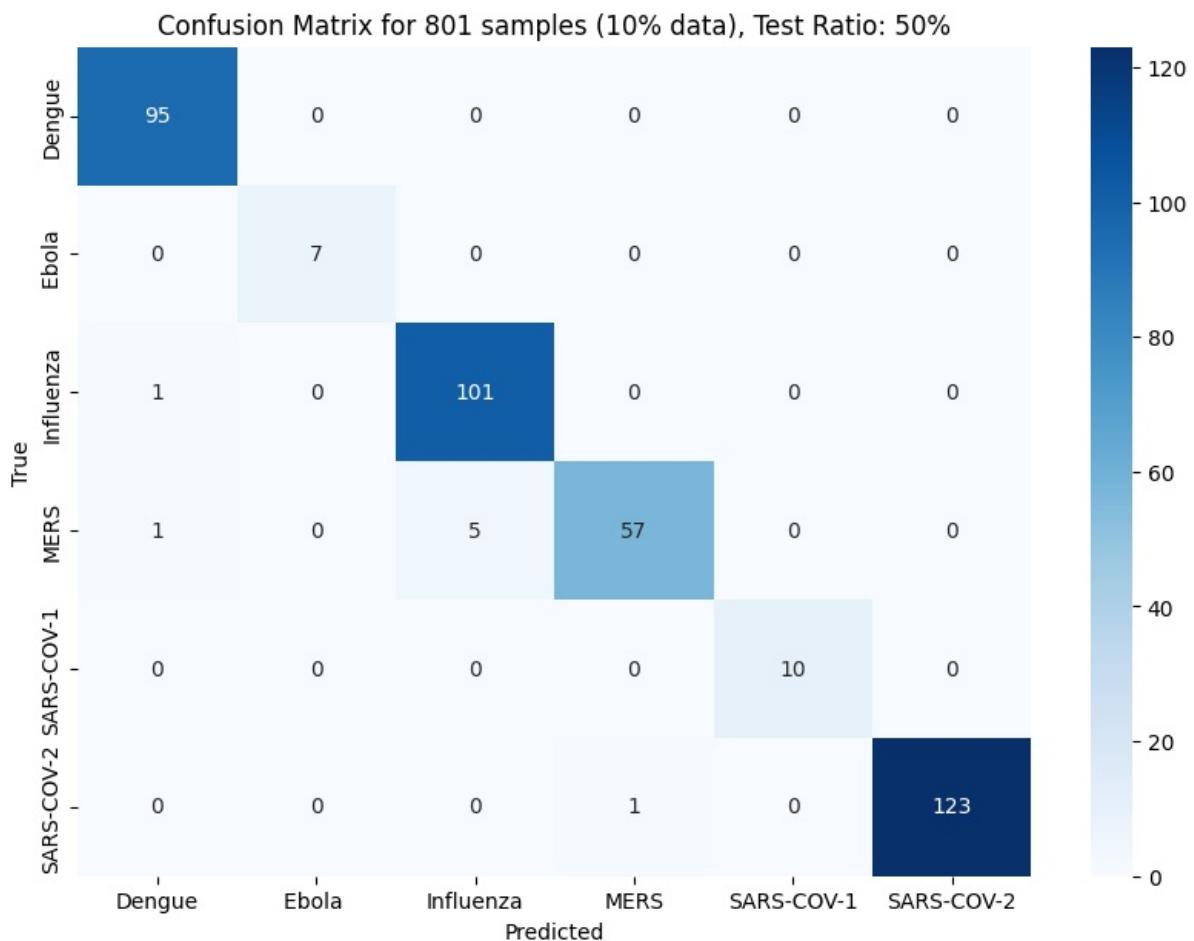
Model Loss for 801 samples (10% data), Test Ratio: 40%



Data Size: 801 samples, Test Ratio: 0.5

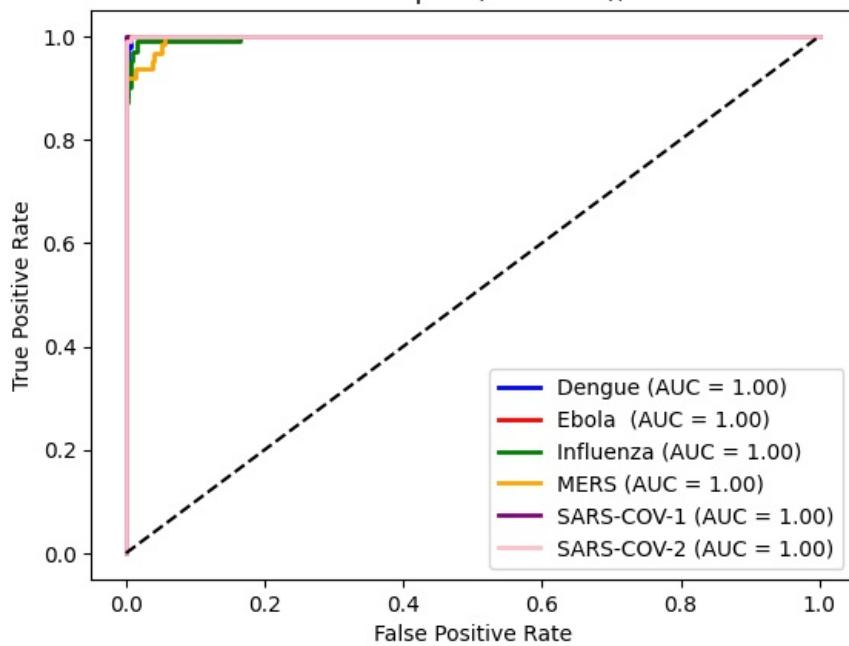
- Accuracy: 0.9800
- Precision: 0.9858
- Recall: 0.9811
- F1_score: 0.9831

Confusion Matrix for 801 samples (10% data), Test Ratio: 50%

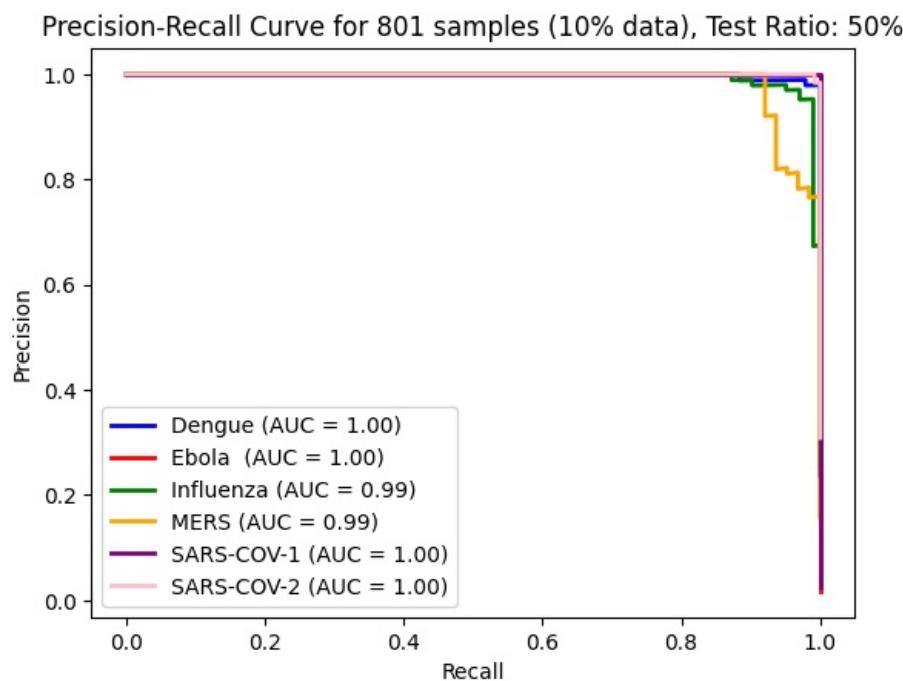


ROC Curve for 801 samples (10% data), Test Ratio: 50%

ROC Curve for 801 samples (10% data), Test Ratio: 50%

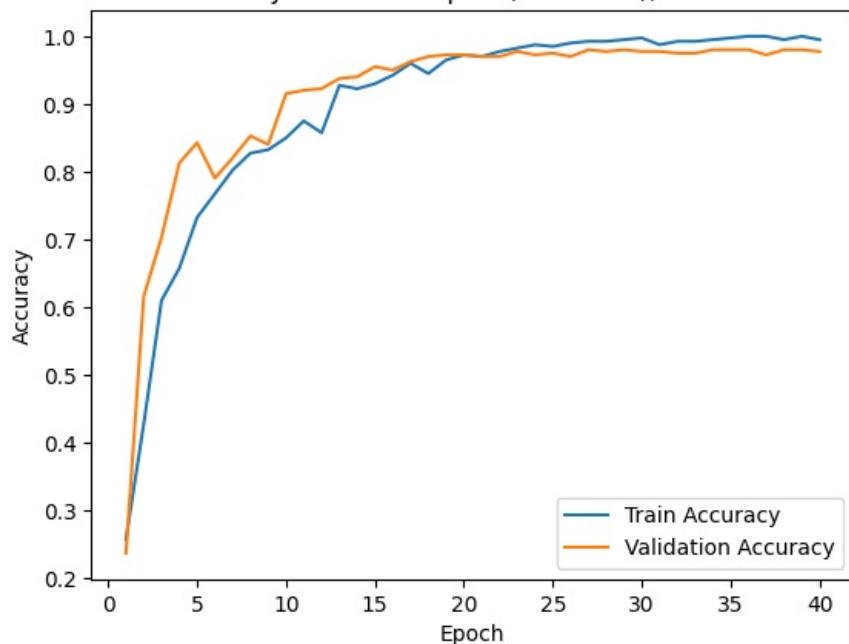


Precision-Recall Curve for 801 samples (10% data), Test Ratio: 50%

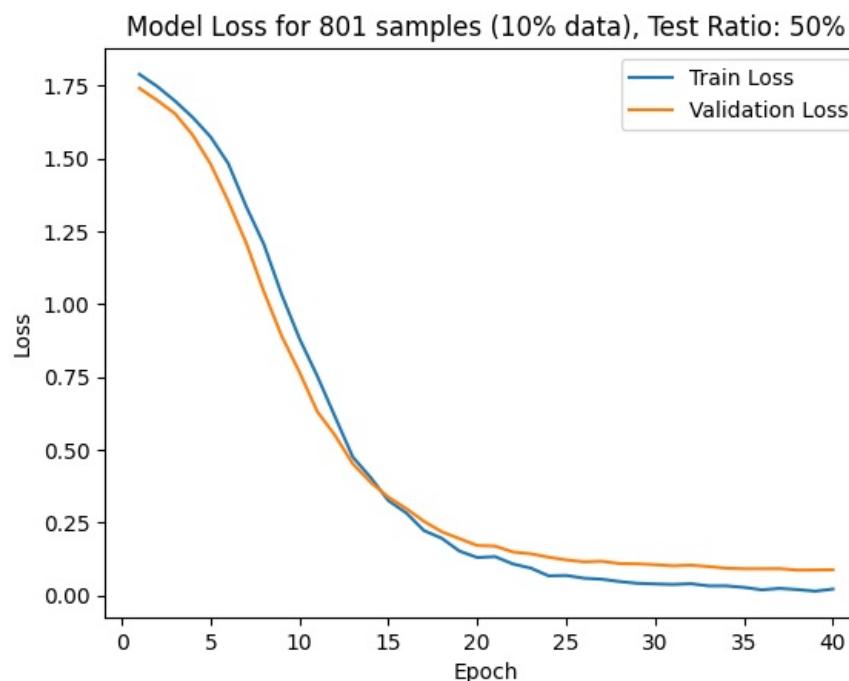


Model Accuracy for 801 samples (10% data), Test Ratio: 50%

Model Accuracy for 801 samples (10% data), Test Ratio: 50%



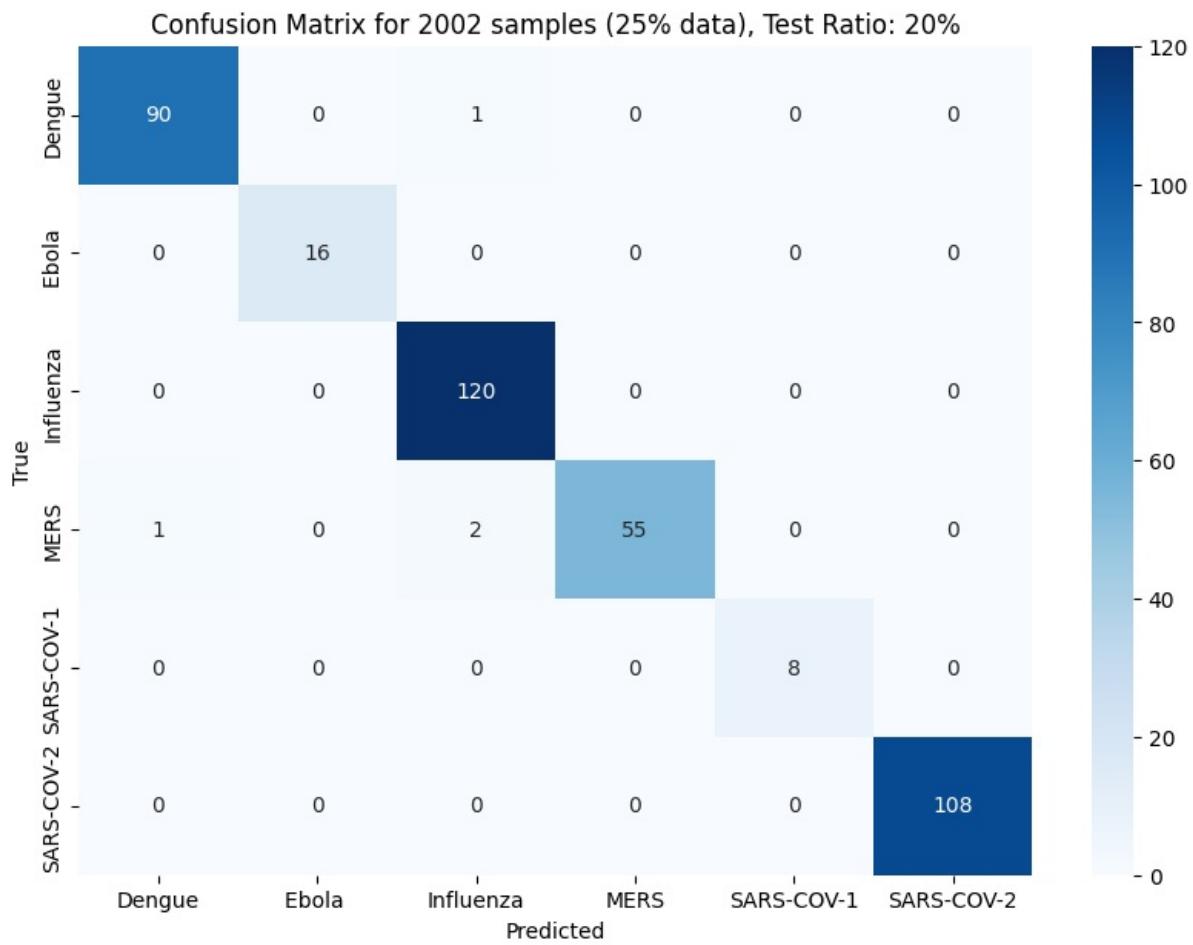
Model Loss for 801 samples (10% data), Test Ratio: 50%



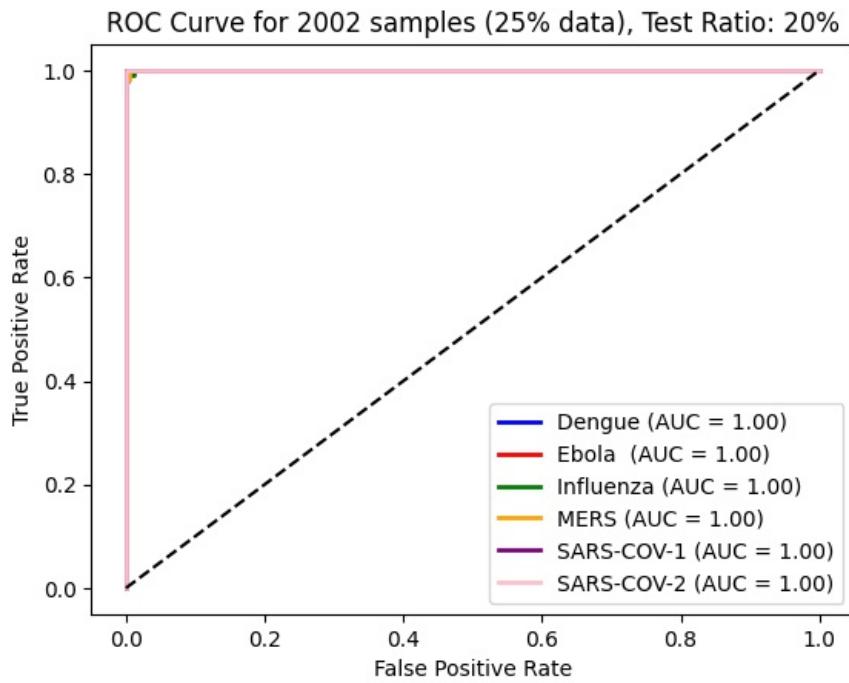
Data Size: 2002 samples, Test Ratio: 0.2

- Accuracy: 0.9900
- Precision: 0.9941
- Recall: 0.9895
- F1_score: 0.9917

Confusion Matrix for 2002 samples (25% data), Test Ratio: 20%

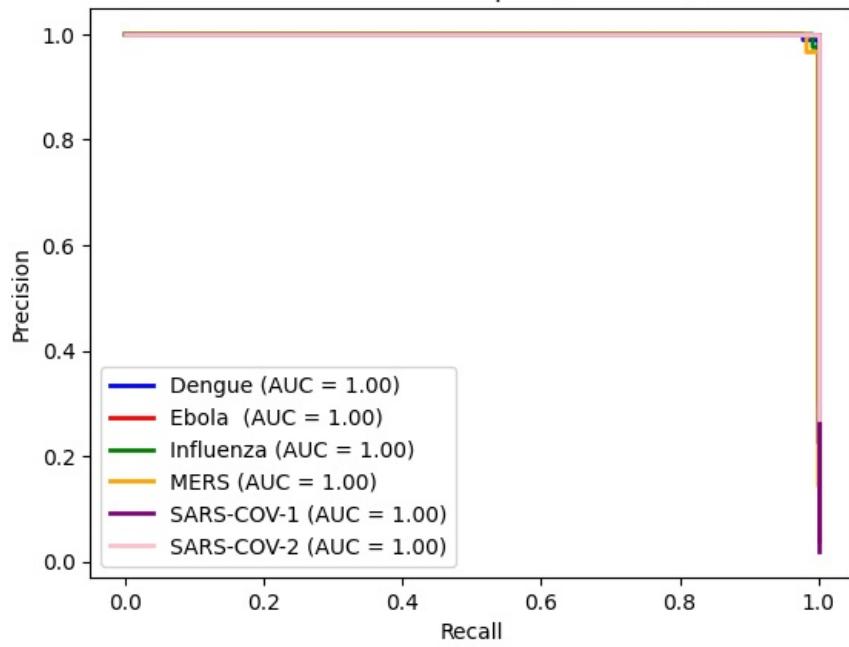


ROC Curve for 2002 samples (25% data), Test Ratio: 20%

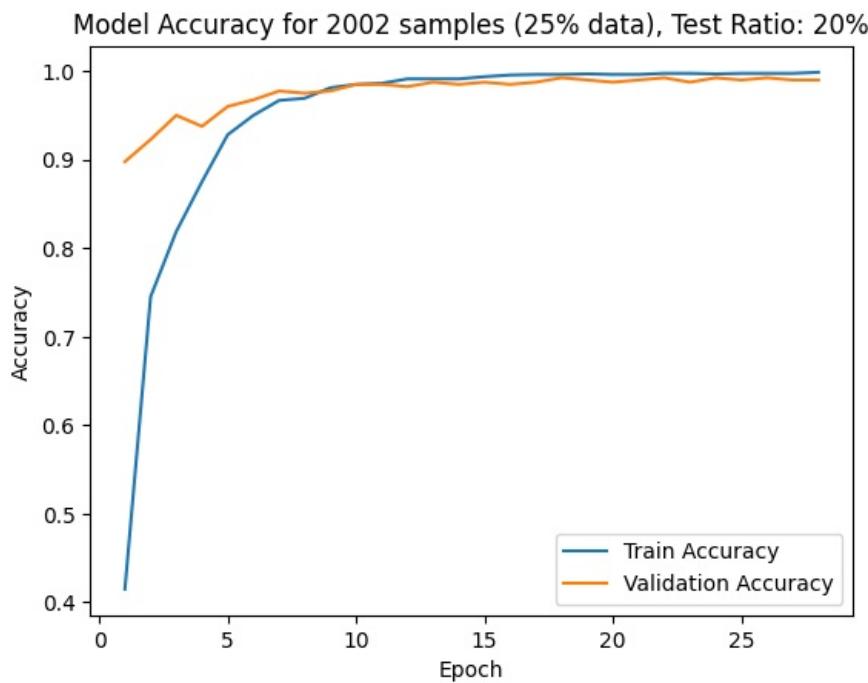


Precision-Recall Curve for 2002 samples (25% data), Test Ratio: 20%

Precision-Recall Curve for 2002 samples (25% data), Test Ratio: 20%

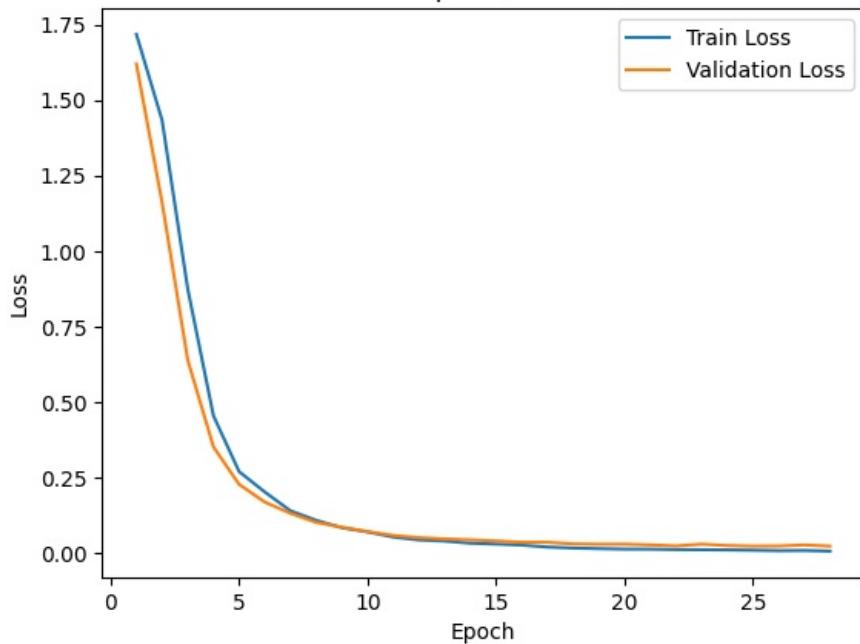


Model Accuracy for 2002 samples (25% data), Test Ratio: 20%



Model Loss for 2002 samples (25% data), Test Ratio: 20%

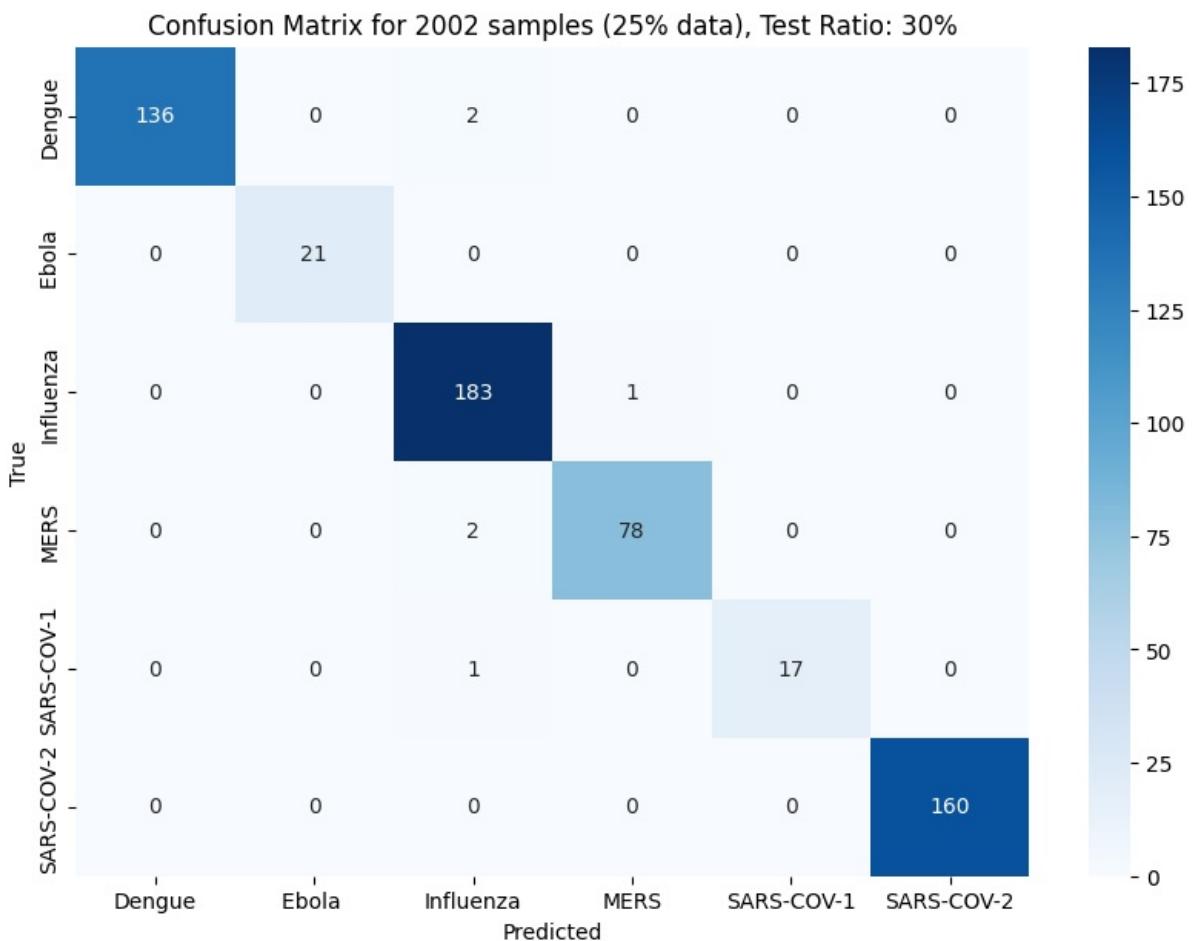
Model Loss for 2002 samples (25% data), Test Ratio: 20%



Data Size: 2002 samples, Test Ratio: 0.3

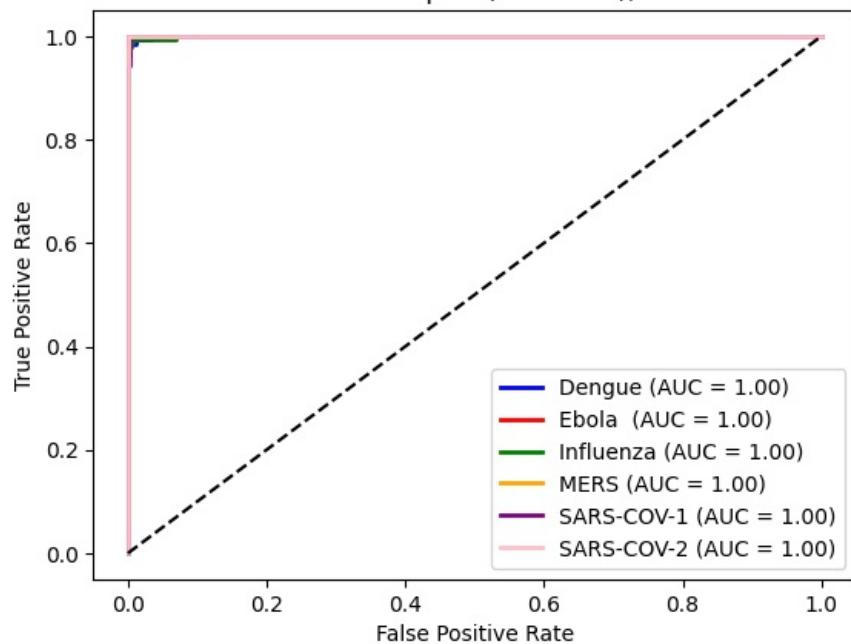
- Accuracy: 0.9900
- Precision: 0.9935
- Recall: 0.9833
- F1_score: 0.9882

Confusion Matrix for 2002 samples (25% data), Test Ratio: 30%

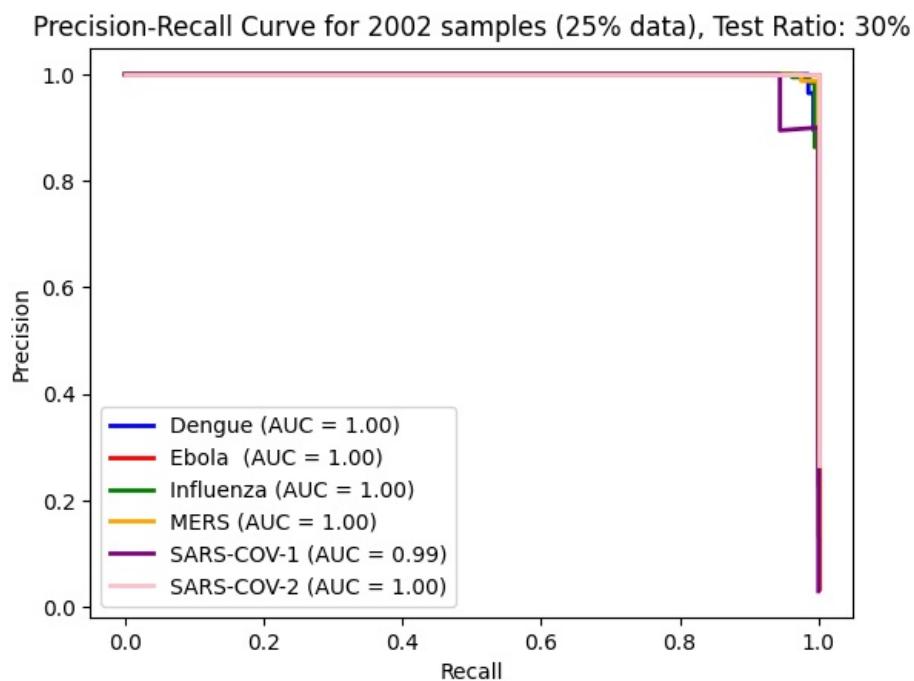


ROC Curve for 2002 samples (25% data), Test Ratio: 30%

ROC Curve for 2002 samples (25% data), Test Ratio: 30%

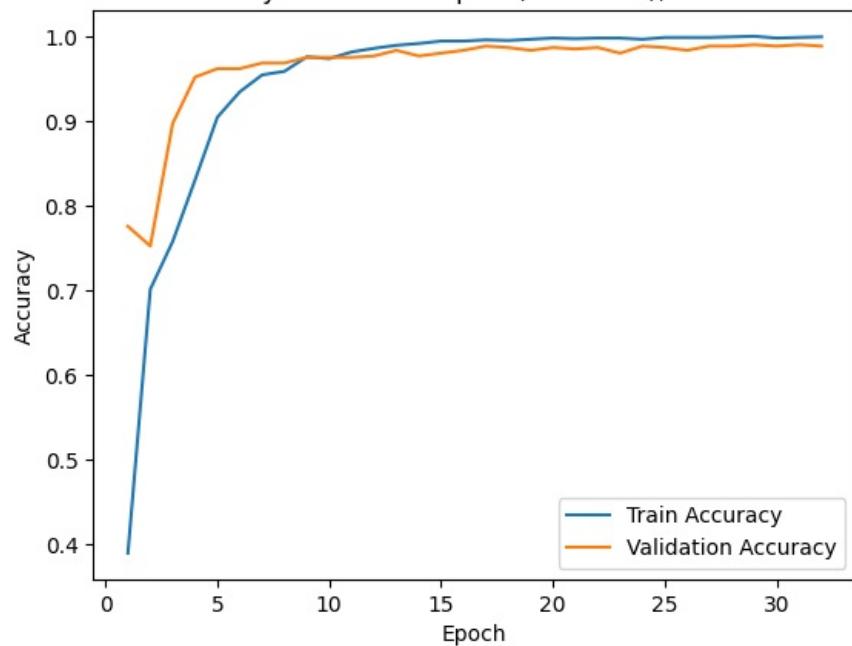


Precision-Recall Curve for 2002 samples (25% data), Test Ratio: 30%

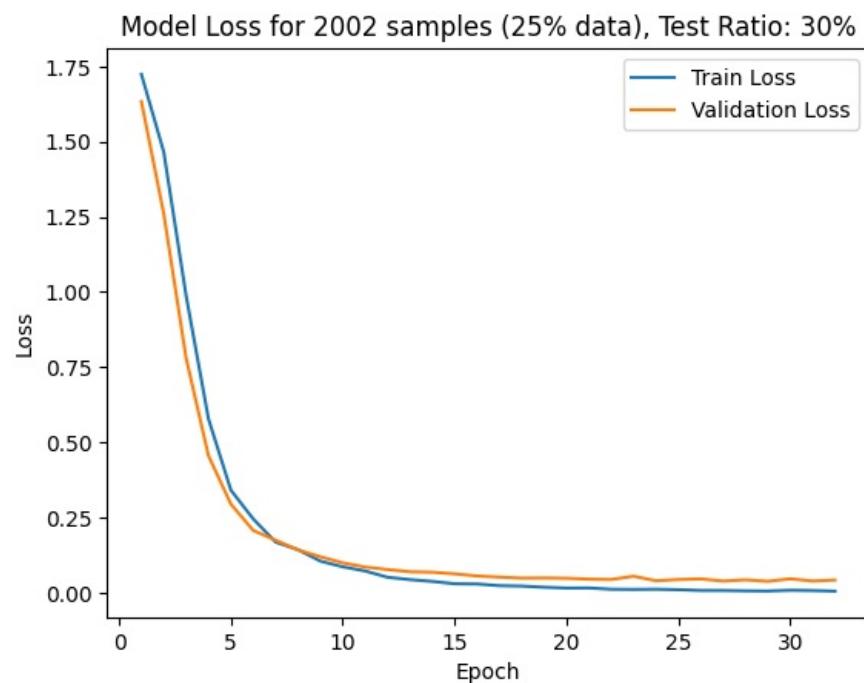


Model Accuracy for 2002 samples (25% data), Test Ratio: 30%

Model Accuracy for 2002 samples (25% data), Test Ratio: 30%



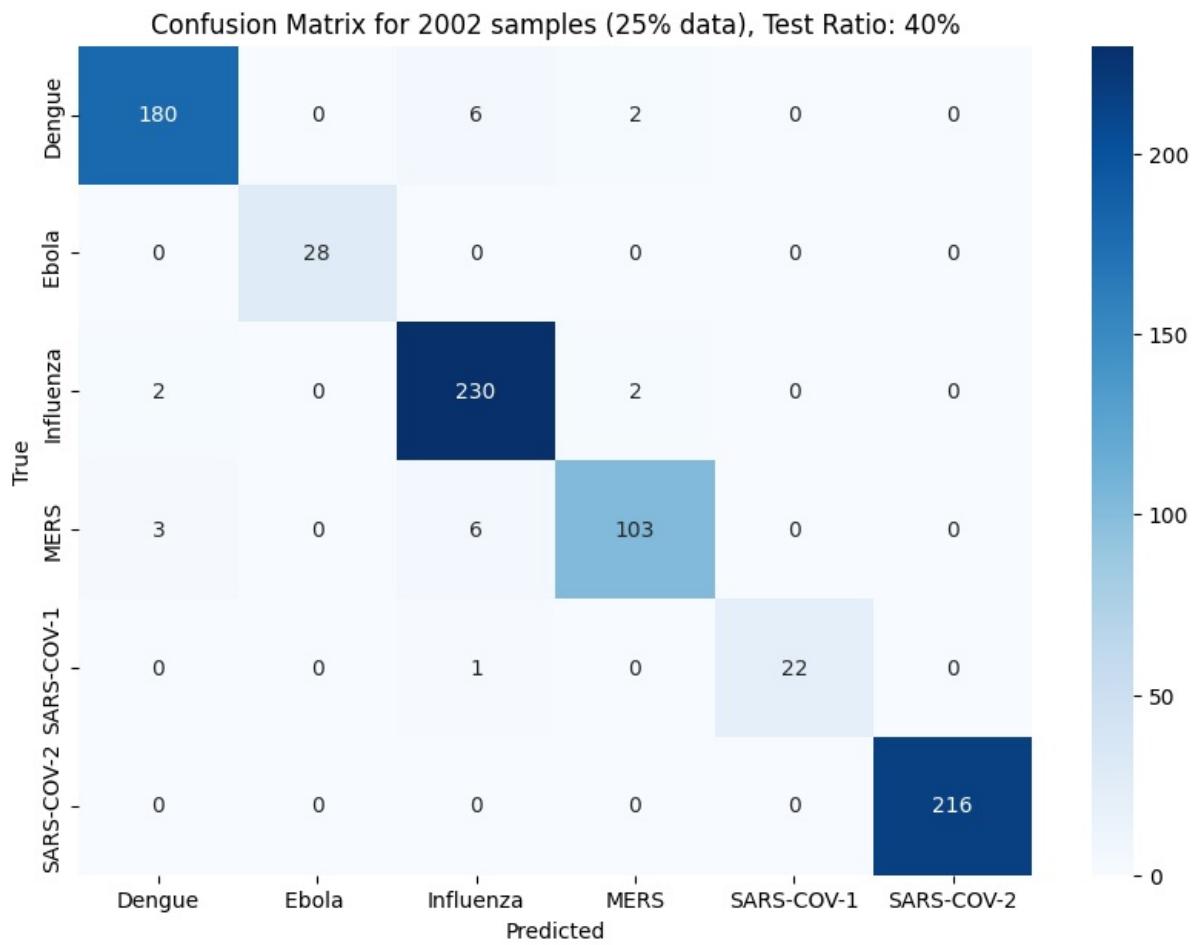
Model Loss for 2002 samples (25% data), Test Ratio: 30%



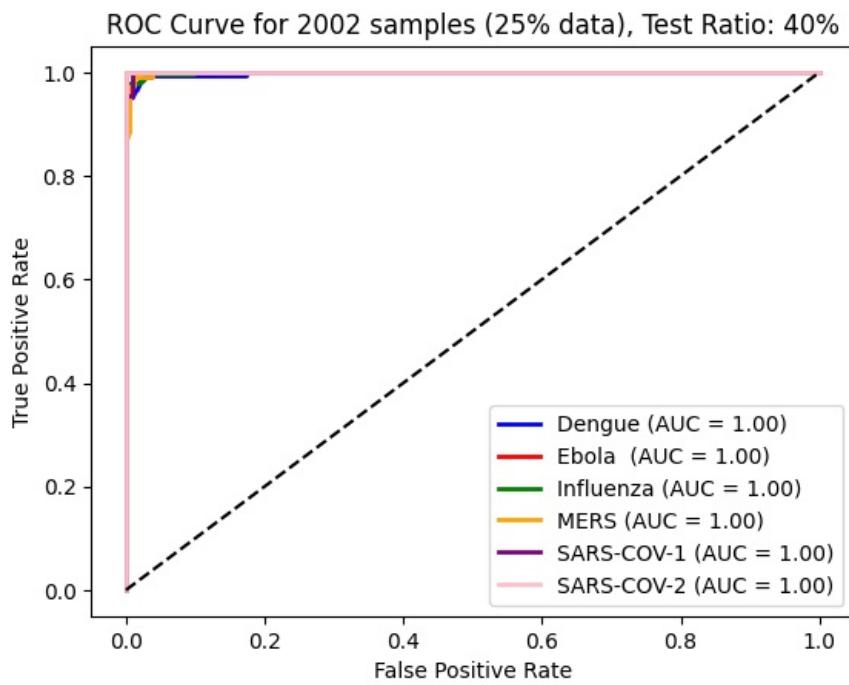
Data Size: 2002 samples, Test Ratio: 0.4

- Accuracy: 0.9725
- Precision: 0.9803
- Recall: 0.9694
- F1_score: 0.9747

Confusion Matrix for 2002 samples (25% data), Test Ratio: 40%

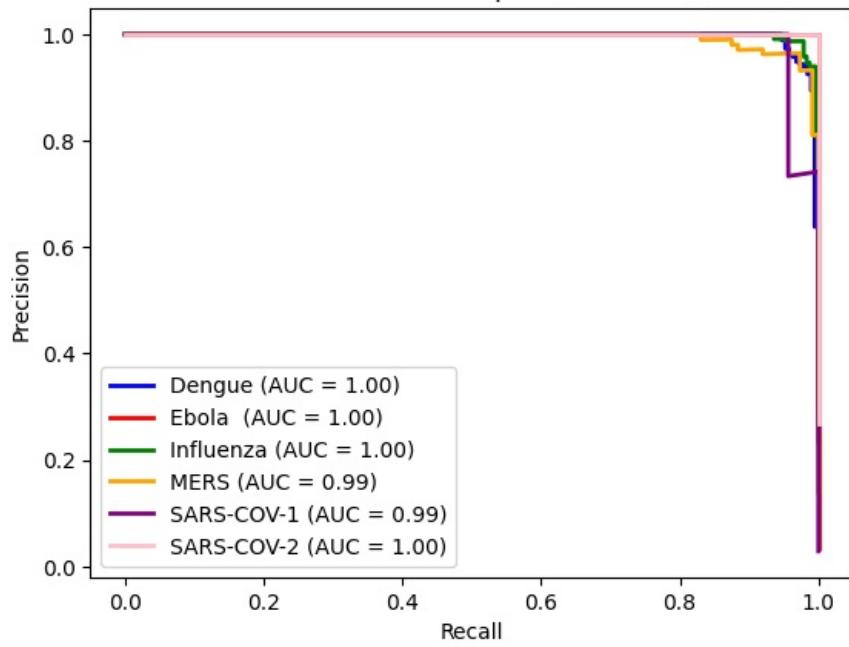


ROC Curve for 2002 samples (25% data), Test Ratio: 40%

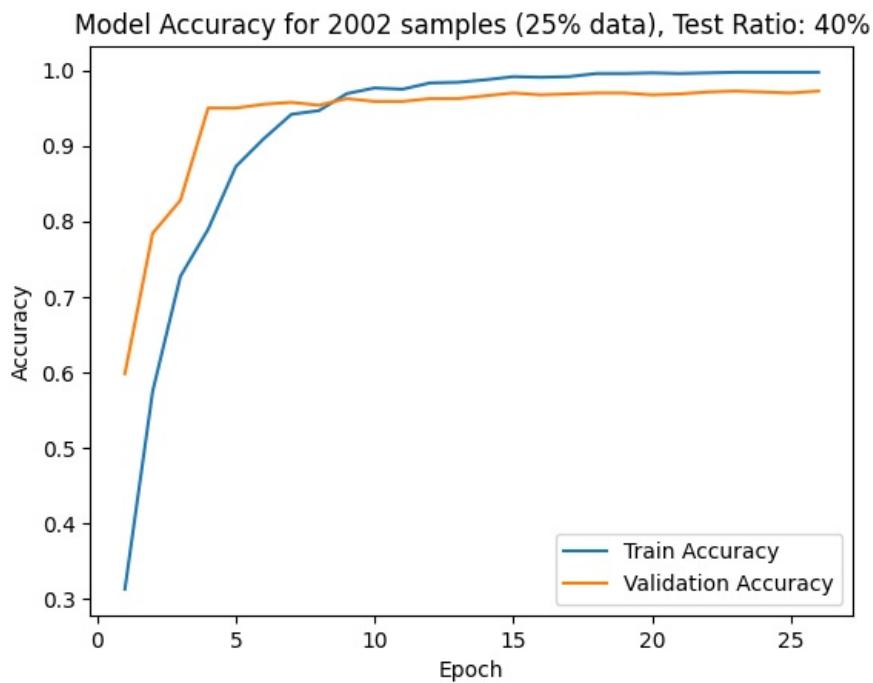


Precision-Recall Curve for 2002 samples (25% data), Test Ratio: 40%

Precision-Recall Curve for 2002 samples (25% data), Test Ratio: 40%

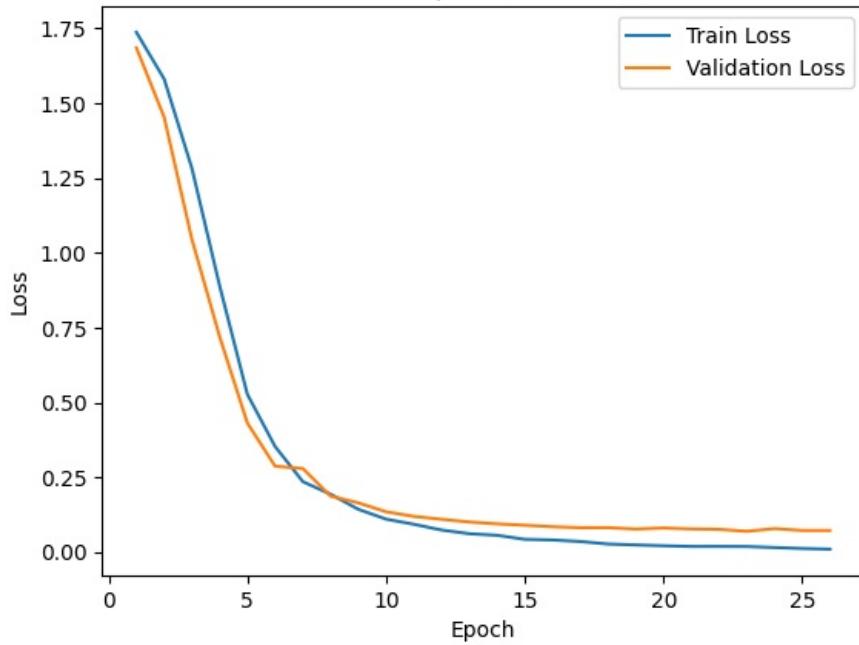


Model Accuracy for 2002 samples (25% data), Test Ratio: 40%



Model Loss for 2002 samples (25% data), Test Ratio: 40%

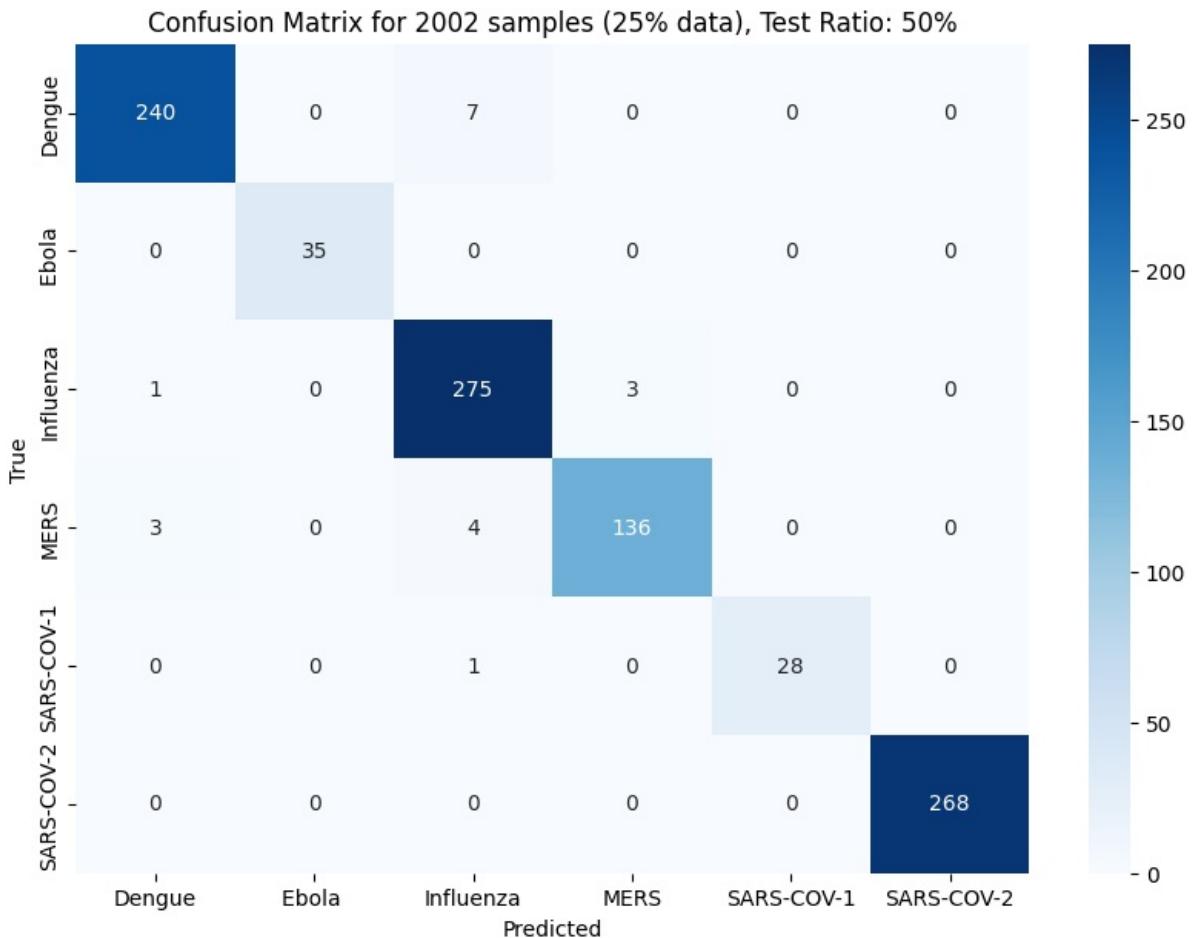
Model Loss for 2002 samples (25% data), Test Ratio: 40%



Data Size: 2002 samples, Test Ratio: 0.5

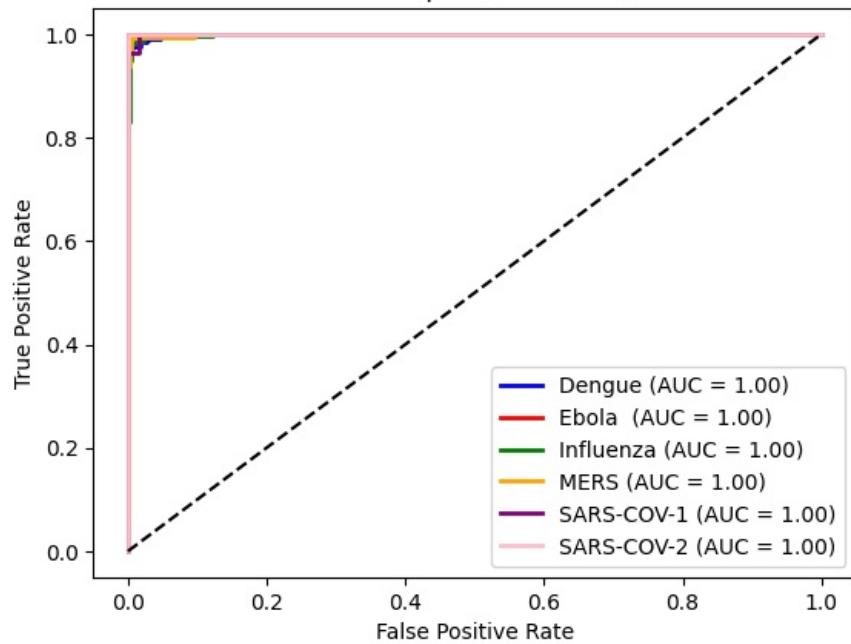
- Accuracy: 0.9810
- Precision: 0.9867
- Recall: 0.9790
- F1_score: 0.9827

Confusion Matrix for 2002 samples (25% data), Test Ratio: 50%

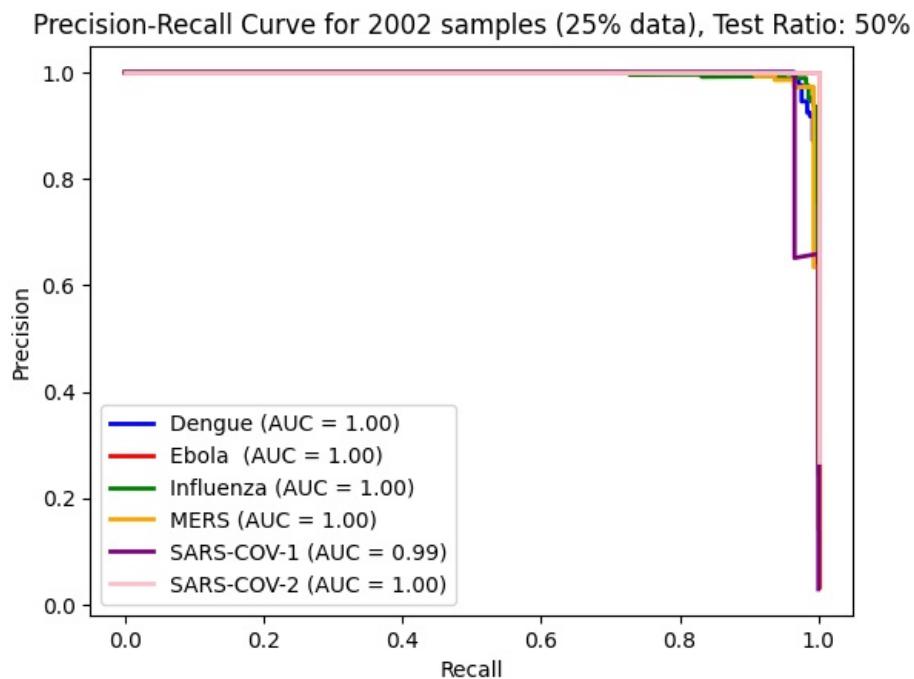


ROC Curve for 2002 samples (25% data), Test Ratio: 50%

ROC Curve for 2002 samples (25% data), Test Ratio: 50%

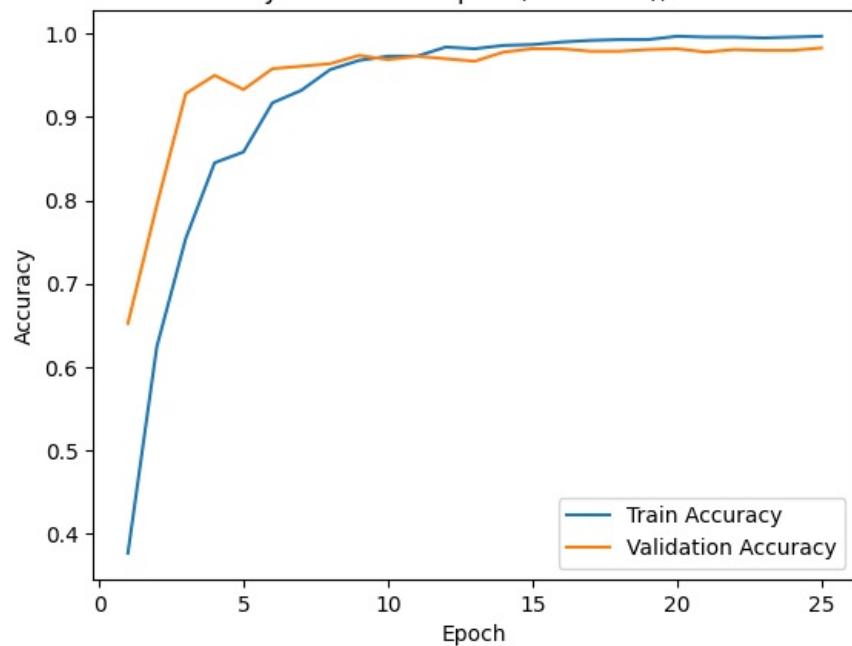


Precision-Recall Curve for 2002 samples (25% data), Test Ratio: 50%

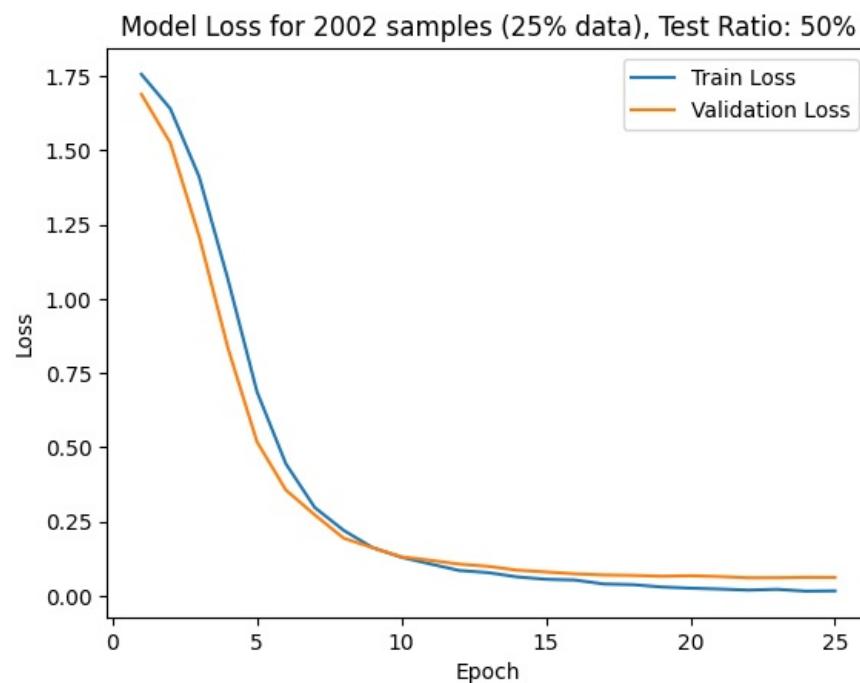


Model Accuracy for 2002 samples (25% data), Test Ratio: 50%

Model Accuracy for 2002 samples (25% data), Test Ratio: 50%



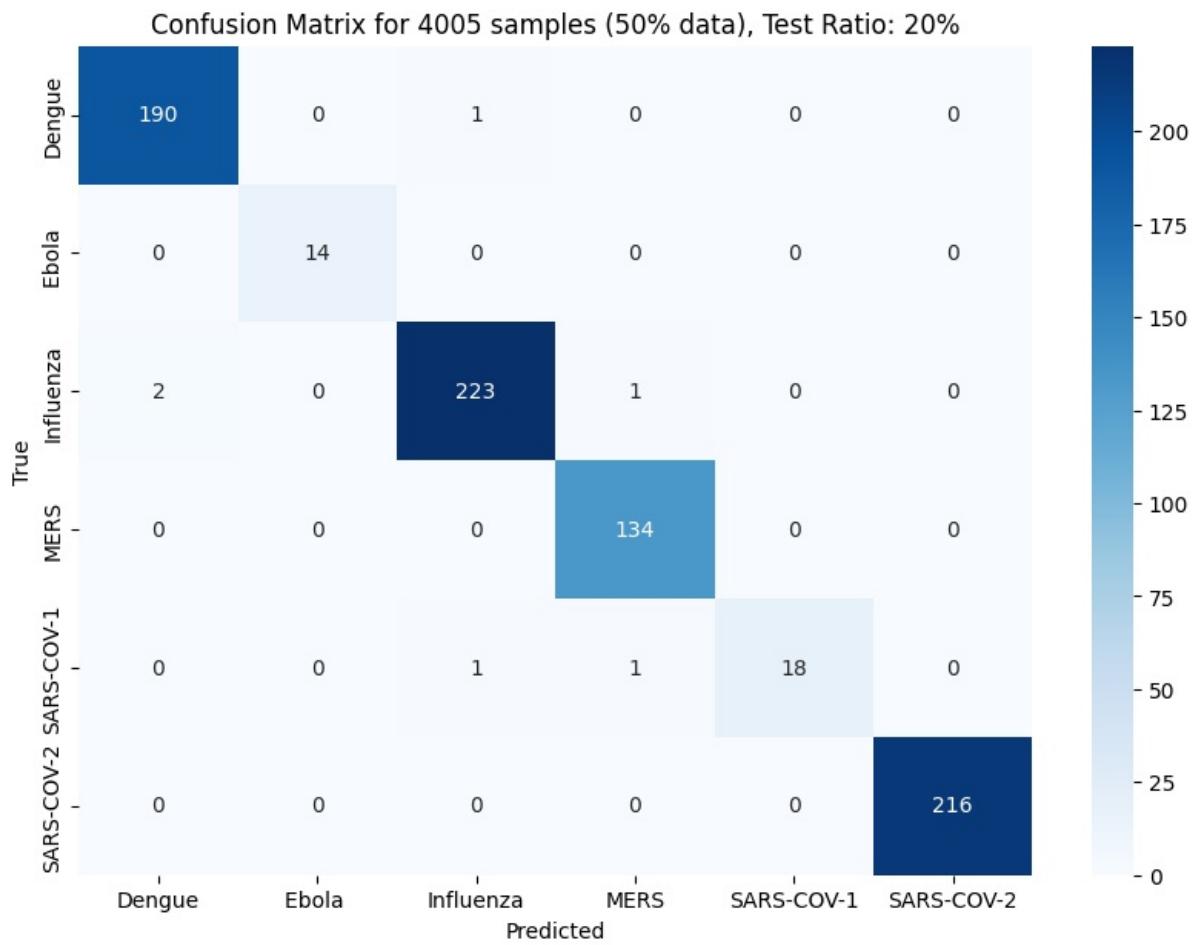
Model Loss for 2002 samples (25% data), Test Ratio: 50%



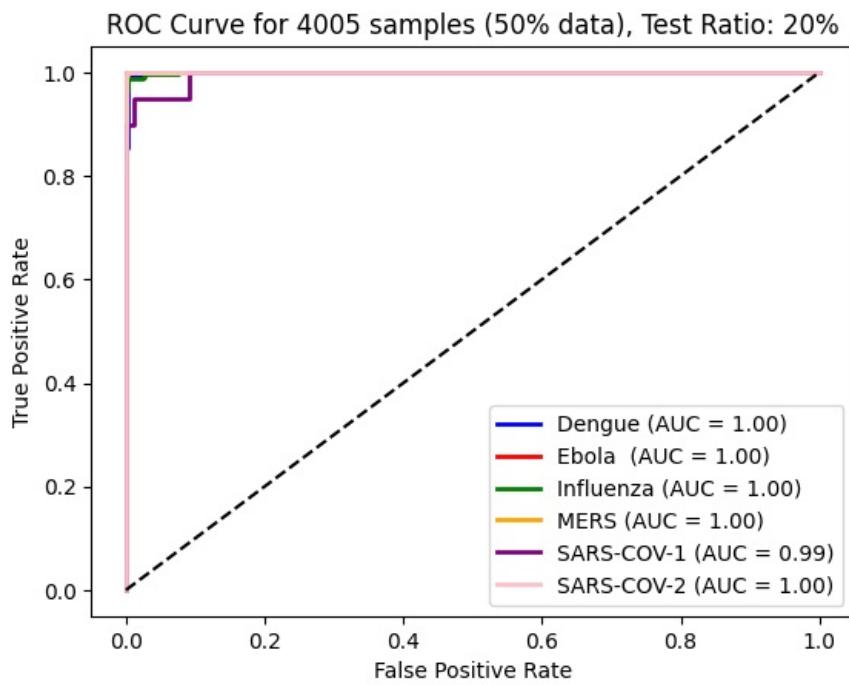
Data Size: 4005 samples, Test Ratio: 0.2

- Accuracy: 0.9925
- Precision: 0.9943
- Recall: 0.9802
- F1_score: 0.9868

Confusion Matrix for 4005 samples (50% data), Test Ratio: 20%

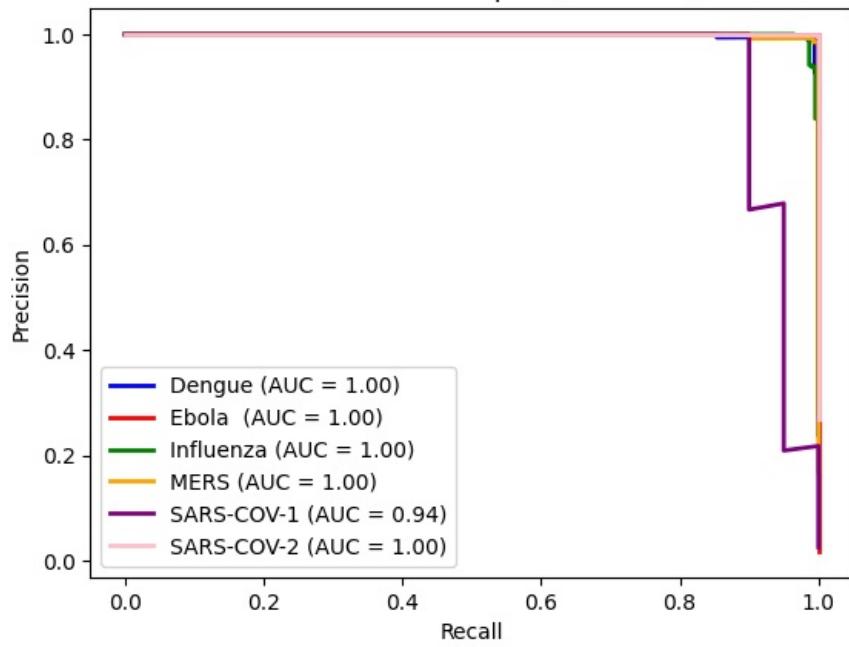


ROC Curve for 4005 samples (50% data), Test Ratio: 20%

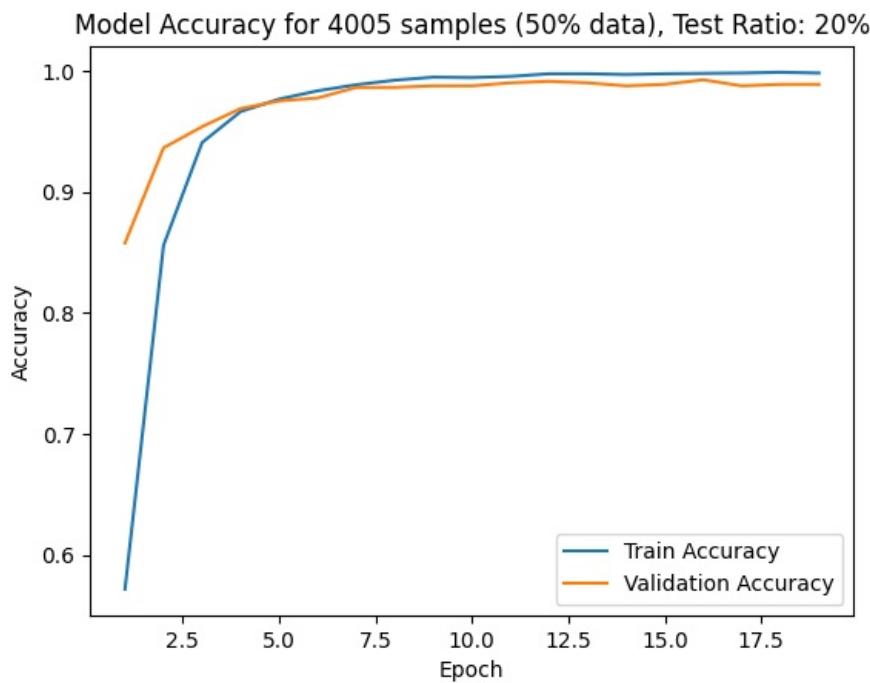


Precision-Recall Curve for 4005 samples (50% data), Test Ratio: 20%

Precision-Recall Curve for 4005 samples (50% data), Test Ratio: 20%

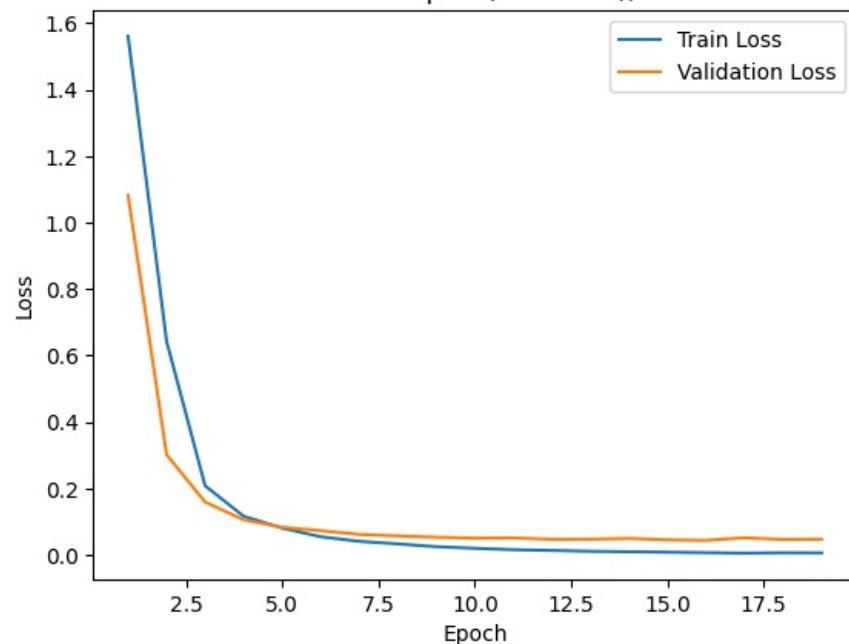


Model Accuracy for 4005 samples (50% data), Test Ratio: 20%



Model Loss for 4005 samples (50% data), Test Ratio: 20%

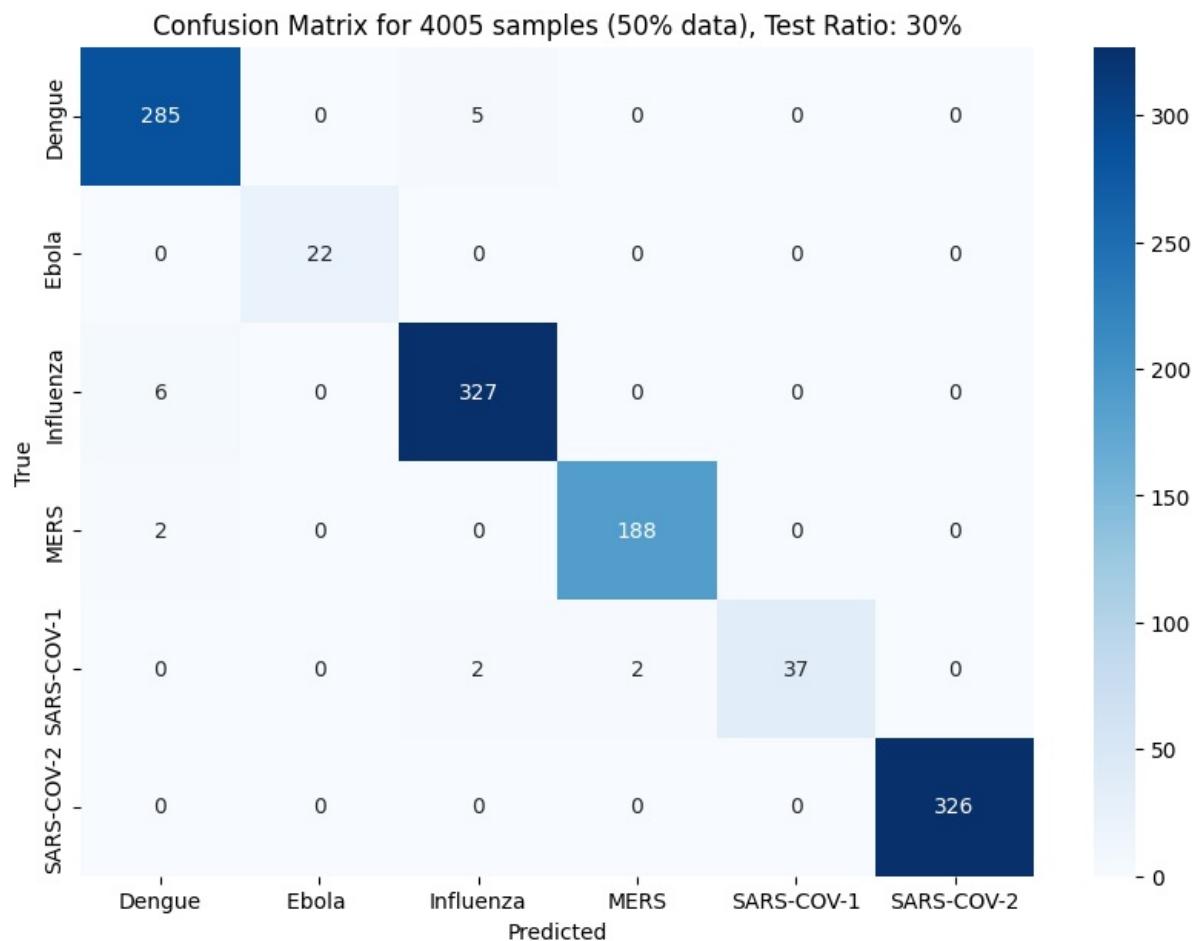
Model Loss for 4005 samples (50% data), Test Ratio: 20%



Data Size: 4005 samples, Test Ratio: 0.3

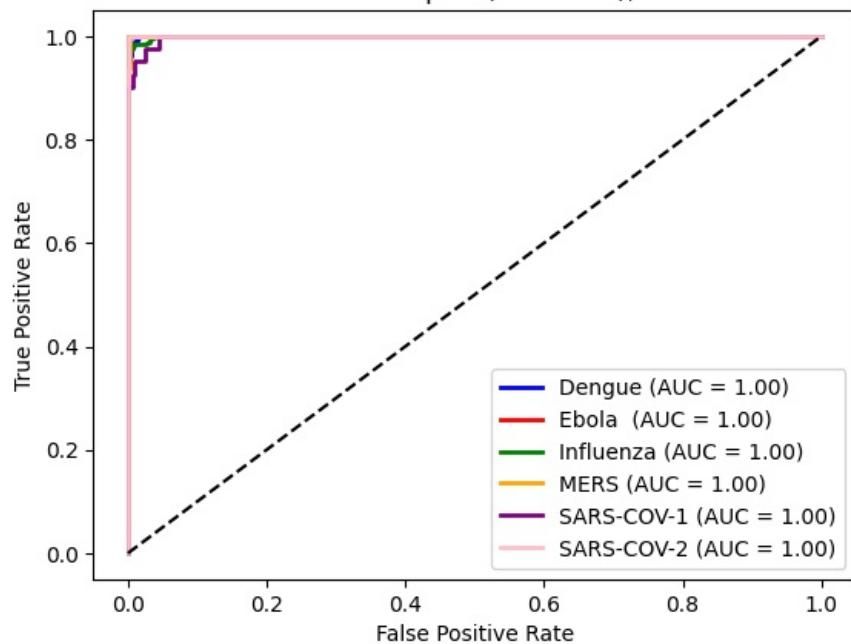
- Accuracy: 0.9859
- Precision: 0.9902
- Recall: 0.9761
- F1_score: 0.9827

Confusion Matrix for 4005 samples (50% data), Test Ratio: 30%

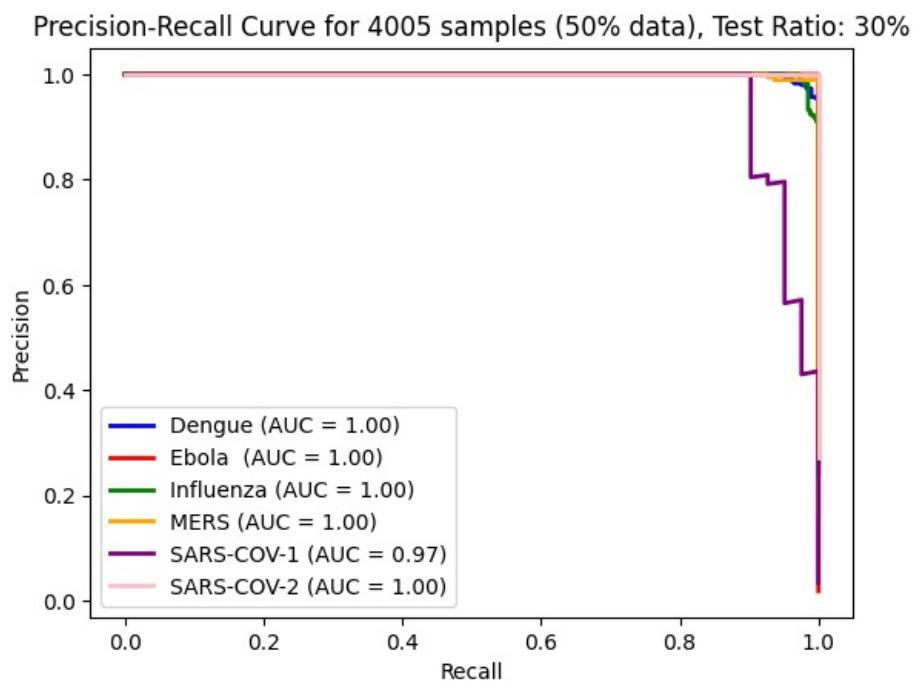


ROC Curve for 4005 samples (50% data), Test Ratio: 30%

ROC Curve for 4005 samples (50% data), Test Ratio: 30%

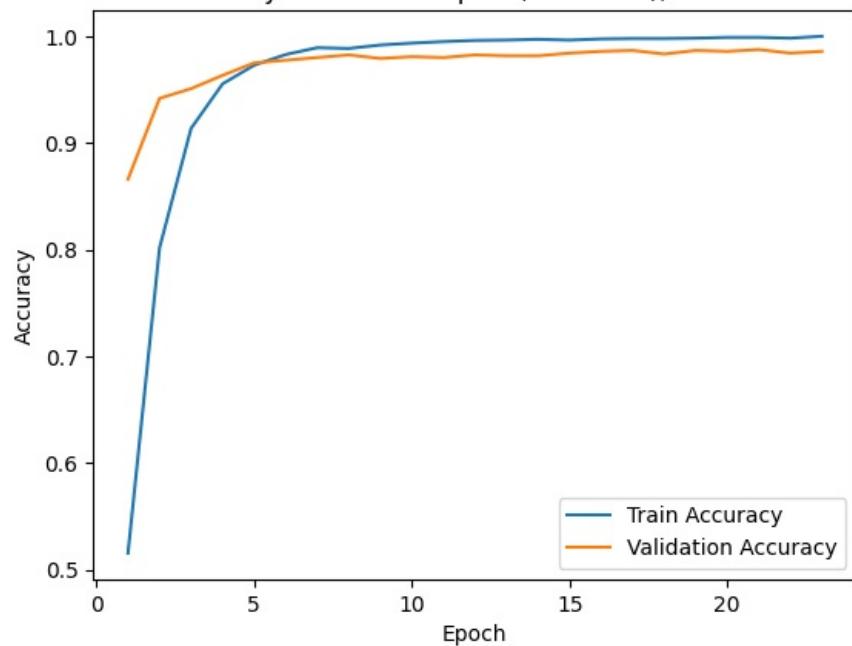


Precision-Recall Curve for 4005 samples (50% data), Test Ratio: 30%

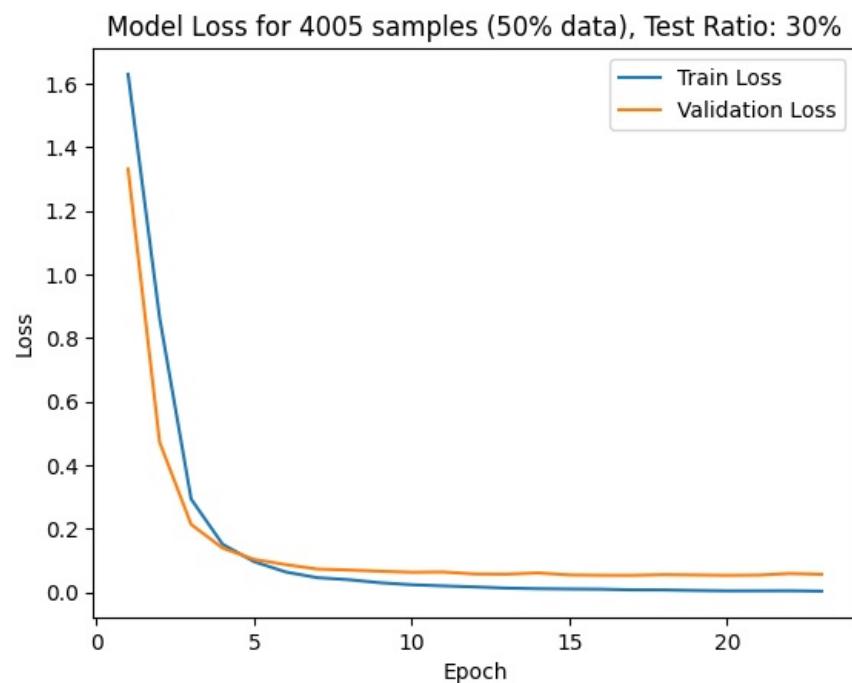


Model Accuracy for 4005 samples (50% data), Test Ratio: 30%

Model Accuracy for 4005 samples (50% data), Test Ratio: 30%



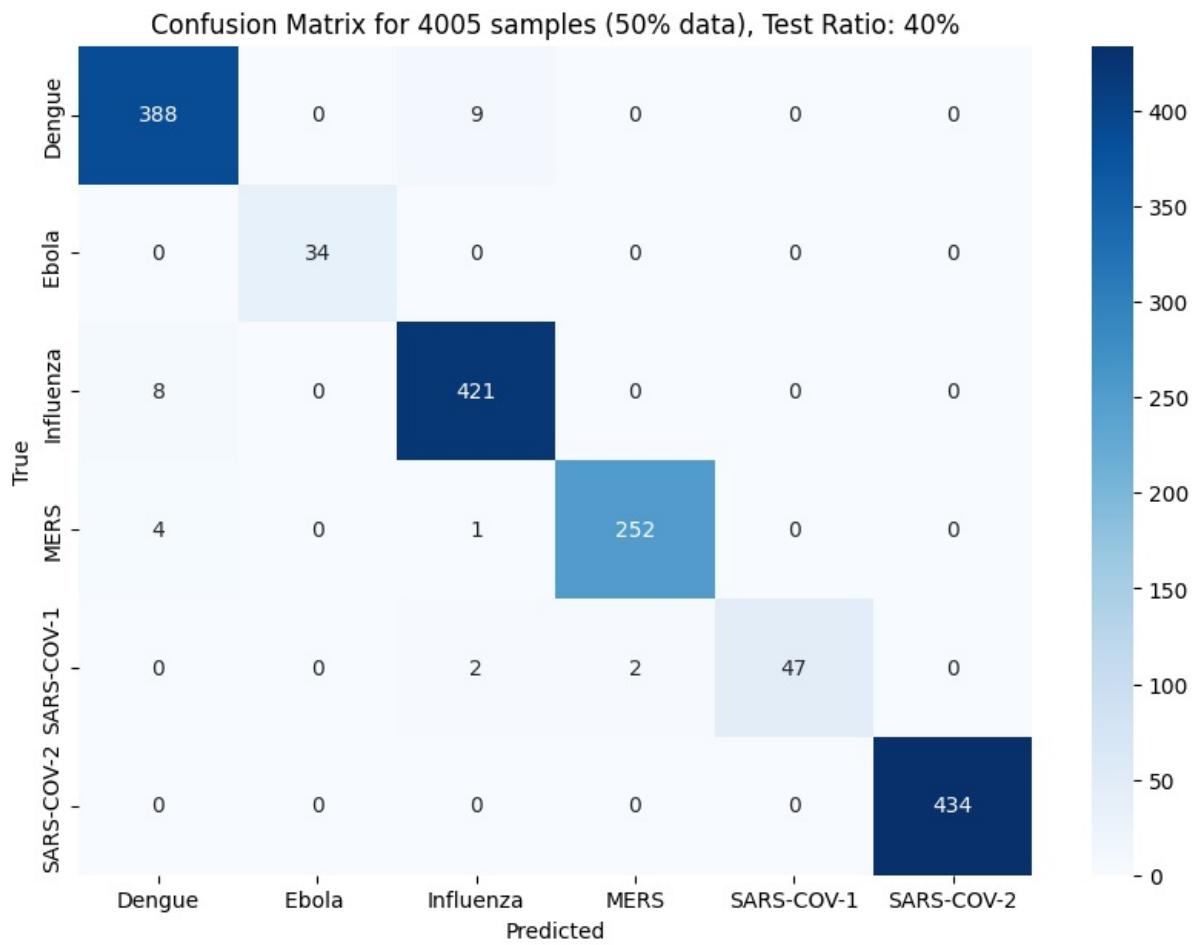
Model Loss for 4005 samples (50% data), Test Ratio: 30%



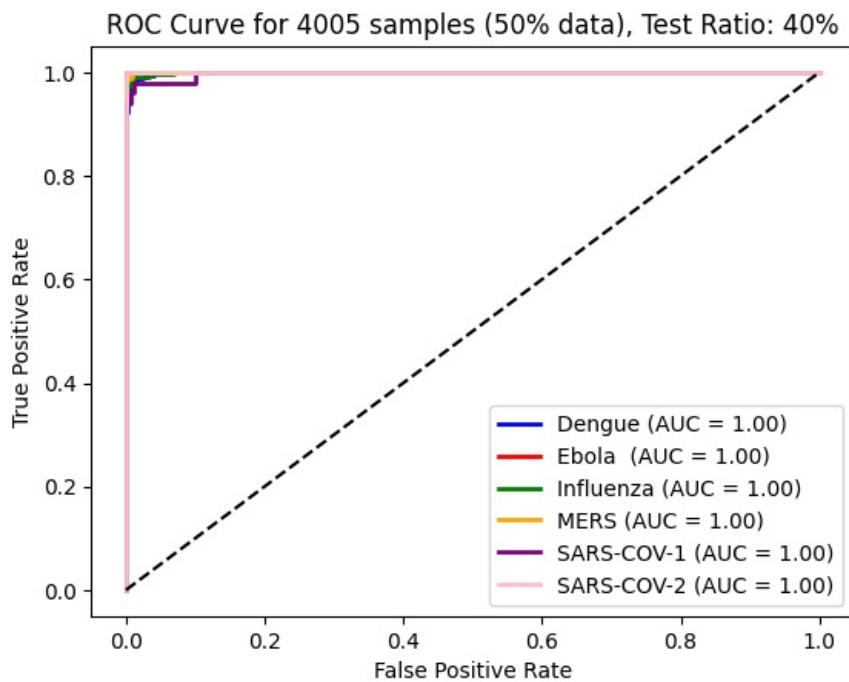
Data Size: 4005 samples, Test Ratio: 0.4

- Accuracy: 0.9838
- Precision: 0.9891
- Recall: 0.9768
- F1_score: 0.9827

Confusion Matrix for 4005 samples (50% data), Test Ratio: 40%

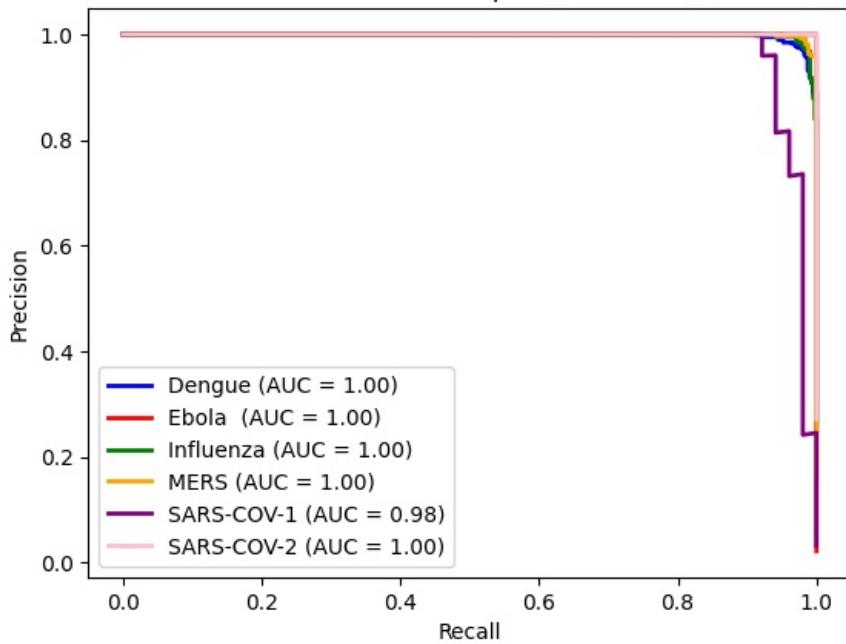


ROC Curve for 4005 samples (50% data), Test Ratio: 40%

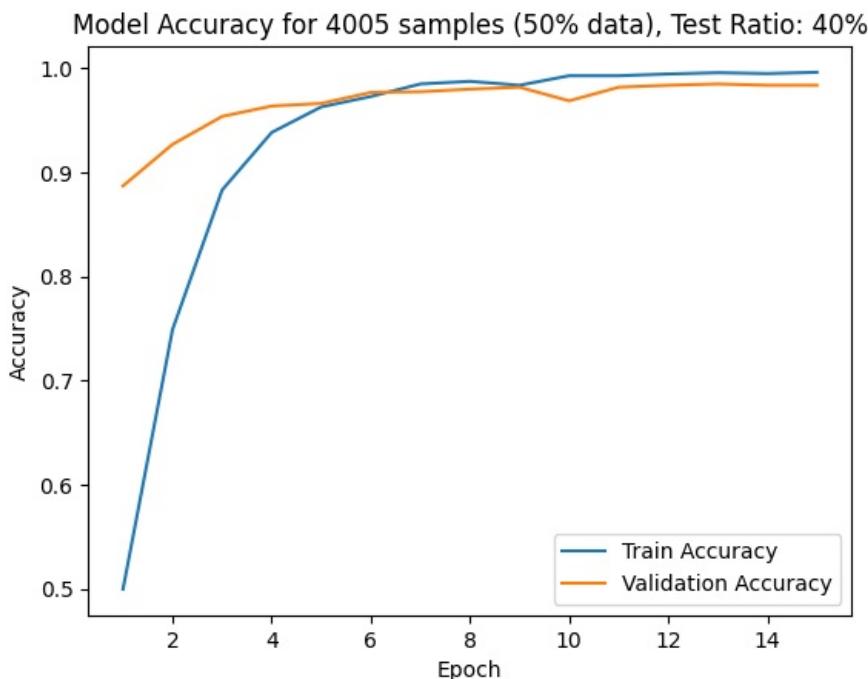


Precision-Recall Curve for 4005 samples (50% data), Test Ratio: 40%

Precision-Recall Curve for 4005 samples (50% data), Test Ratio: 40%

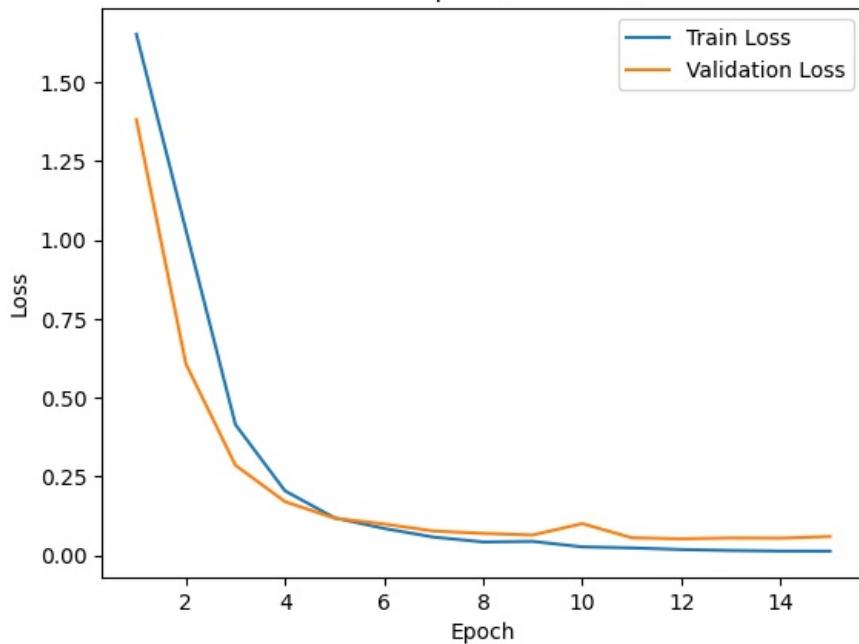


Model Accuracy for 4005 samples (50% data), Test Ratio: 40%



Model Loss for 4005 samples (50% data), Test Ratio: 40%

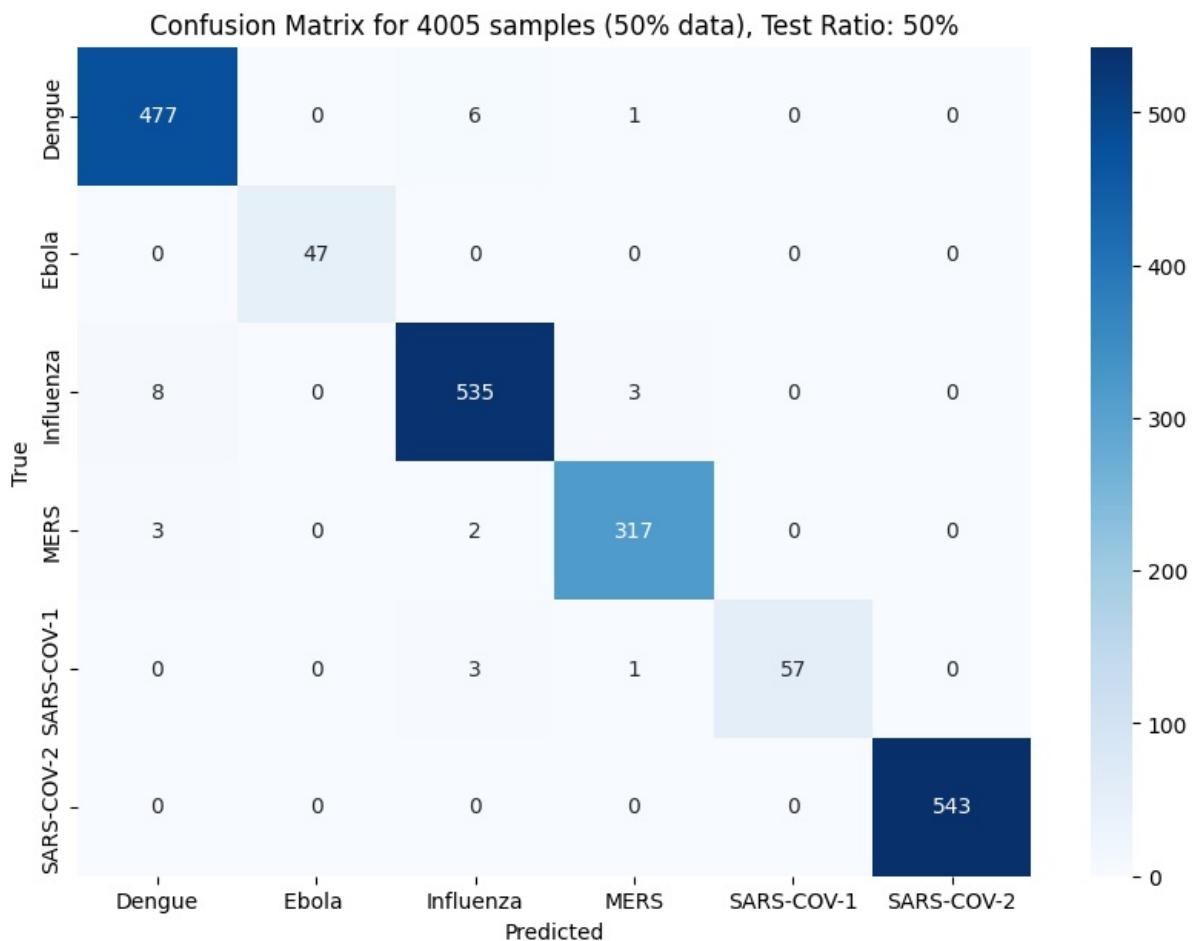
Model Loss for 4005 samples (50% data), Test Ratio: 40%



Data Size: 4005 samples, Test Ratio: 0.5

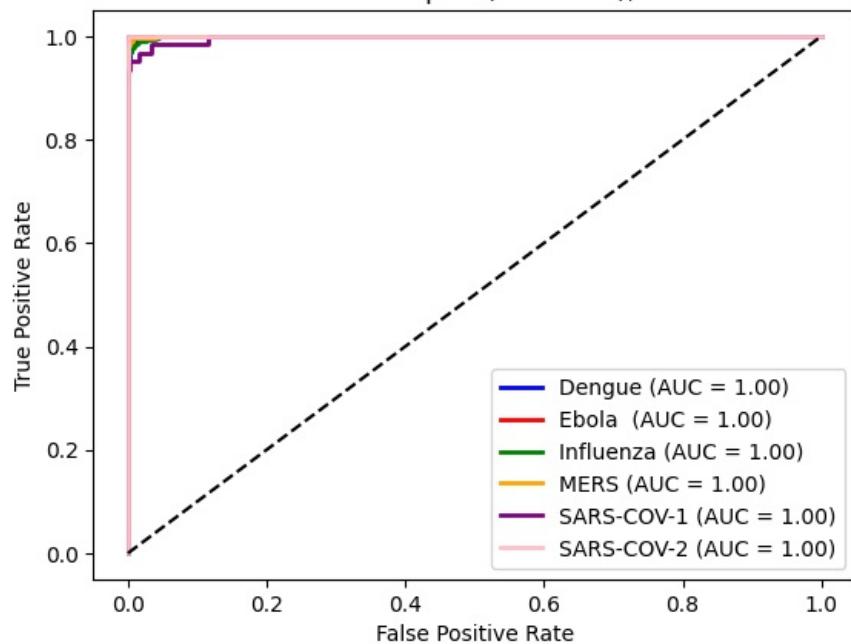
- Accuracy: 0.9865
- Precision: 0.9903
- Recall: 0.9807
- F1_score: 0.9853

Confusion Matrix for 4005 samples (50% data), Test Ratio: 50%

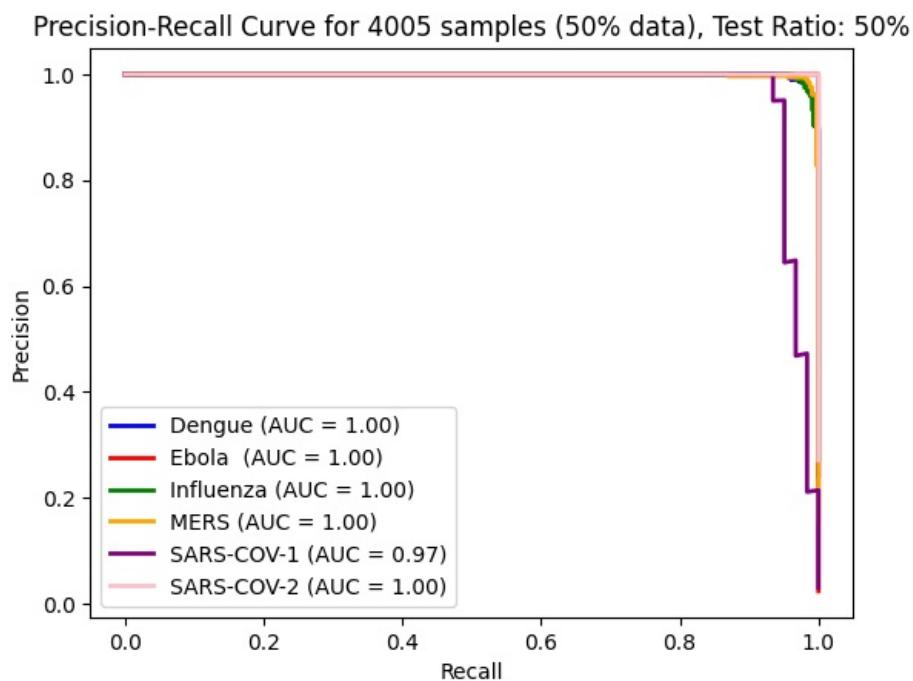


ROC Curve for 4005 samples (50% data), Test Ratio: 50%

ROC Curve for 4005 samples (50% data), Test Ratio: 50%

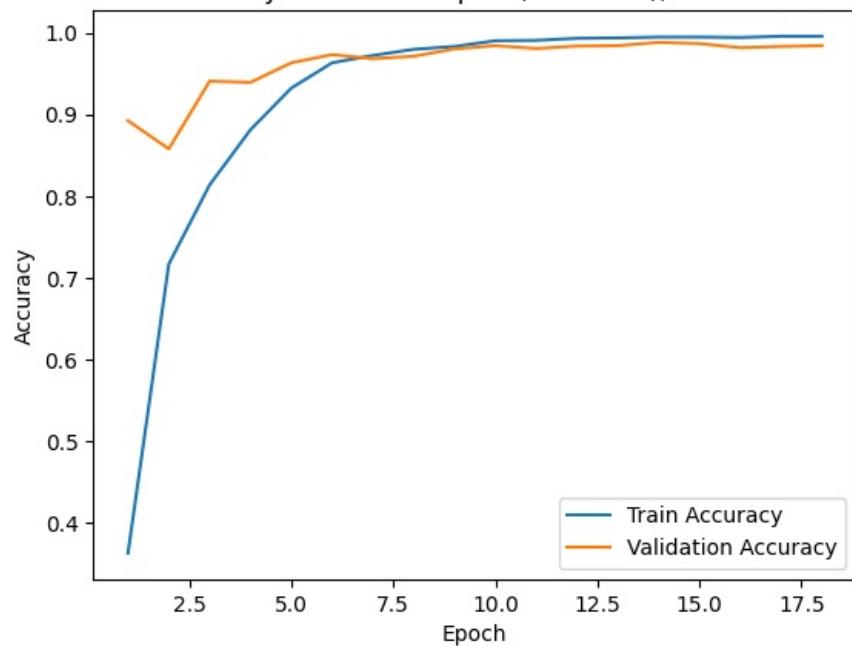


Precision-Recall Curve for 4005 samples (50% data), Test Ratio: 50%

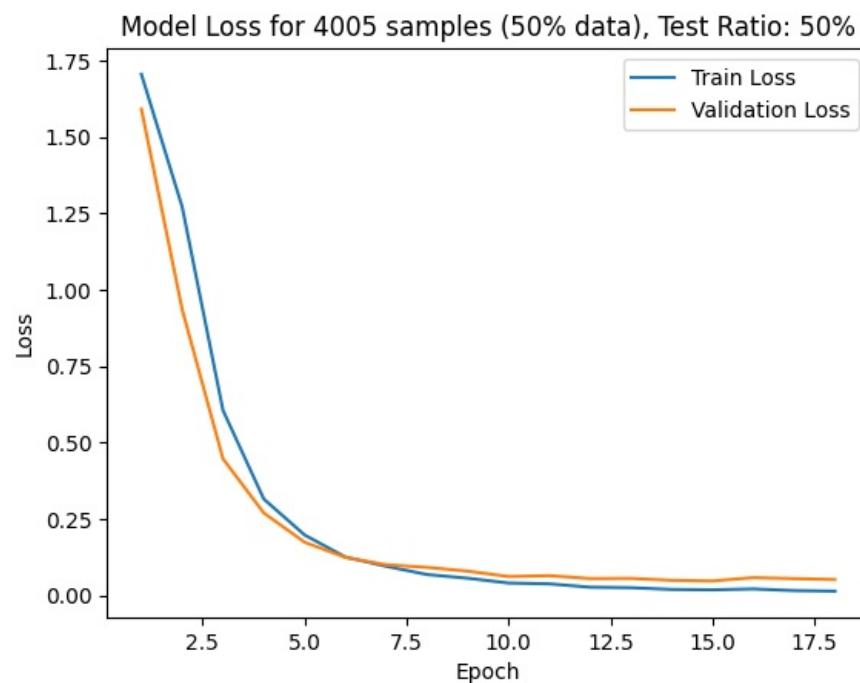


Model Accuracy for 4005 samples (50% data), Test Ratio: 50%

Model Accuracy for 4005 samples (50% data), Test Ratio: 50%



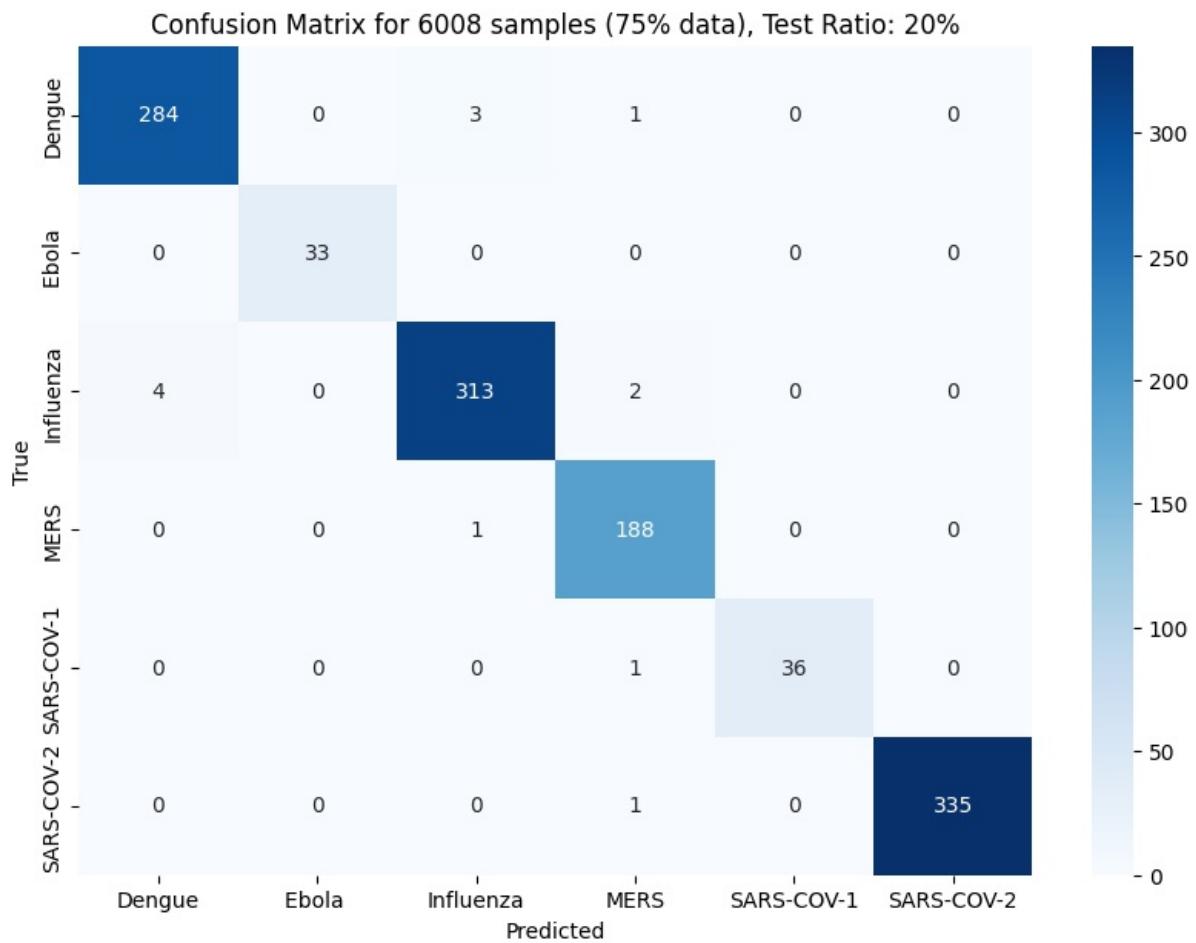
Model Loss for 4005 samples (50% data), Test Ratio: 50%



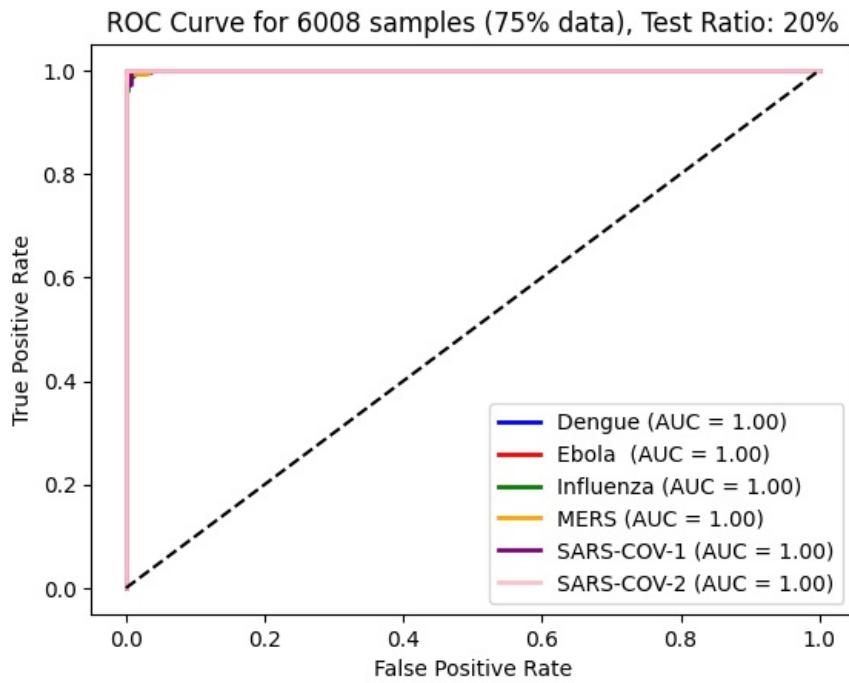
Data Size: 6008 samples, Test Ratio: 0.2

- Accuracy: 0.9892
- Precision: 0.9913
- Recall: 0.9887
- F1_score: 0.9899

Confusion Matrix for 6008 samples (75% data), Test Ratio: 20%

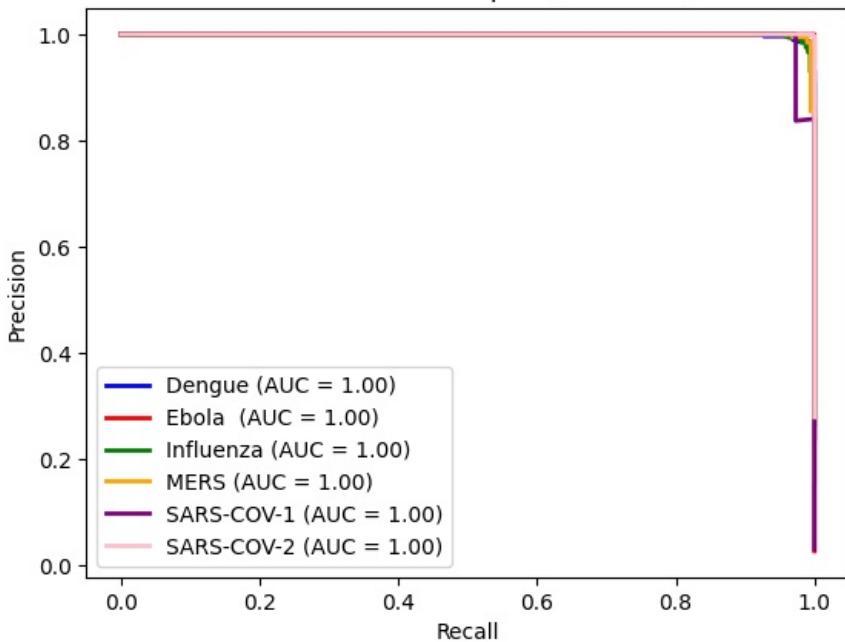


ROC Curve for 6008 samples (75% data), Test Ratio: 20%

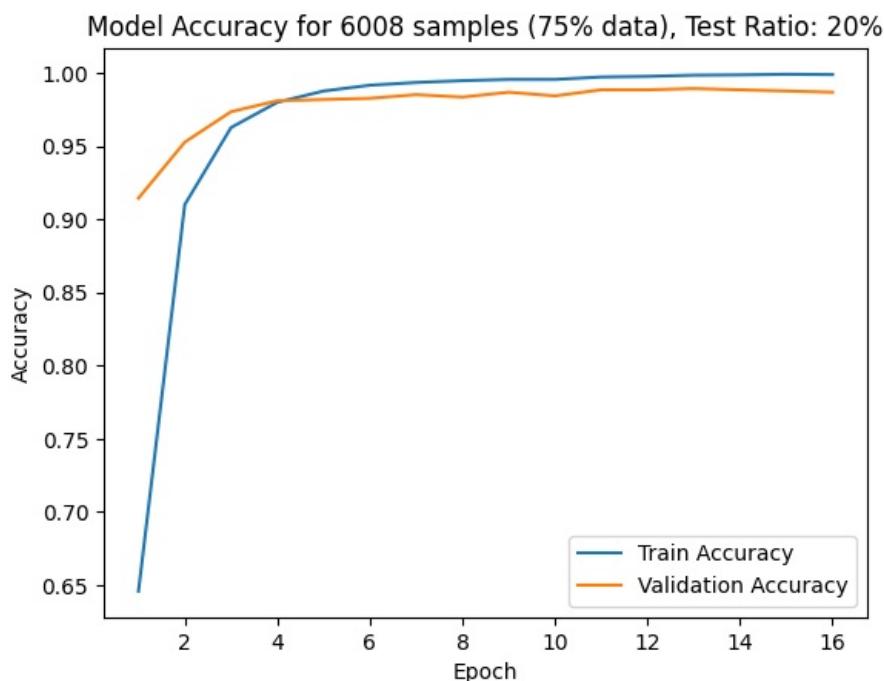


Precision-Recall Curve for 6008 samples (75% data), Test Ratio: 20%

Precision-Recall Curve for 6008 samples (75% data), Test Ratio: 20%

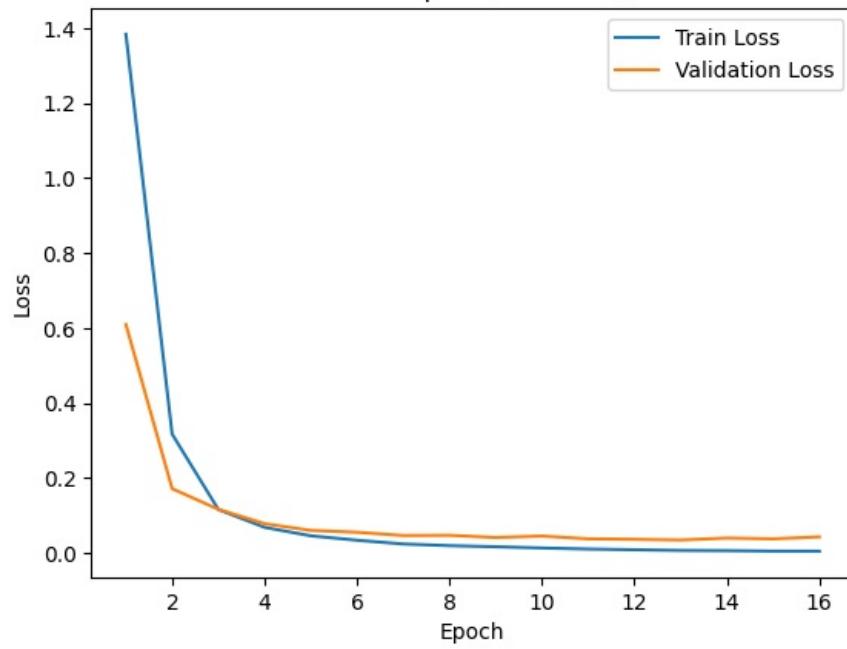


Model Accuracy for 6008 samples (75% data), Test Ratio: 20%



Model Loss for 6008 samples (75% data), Test Ratio: 20%

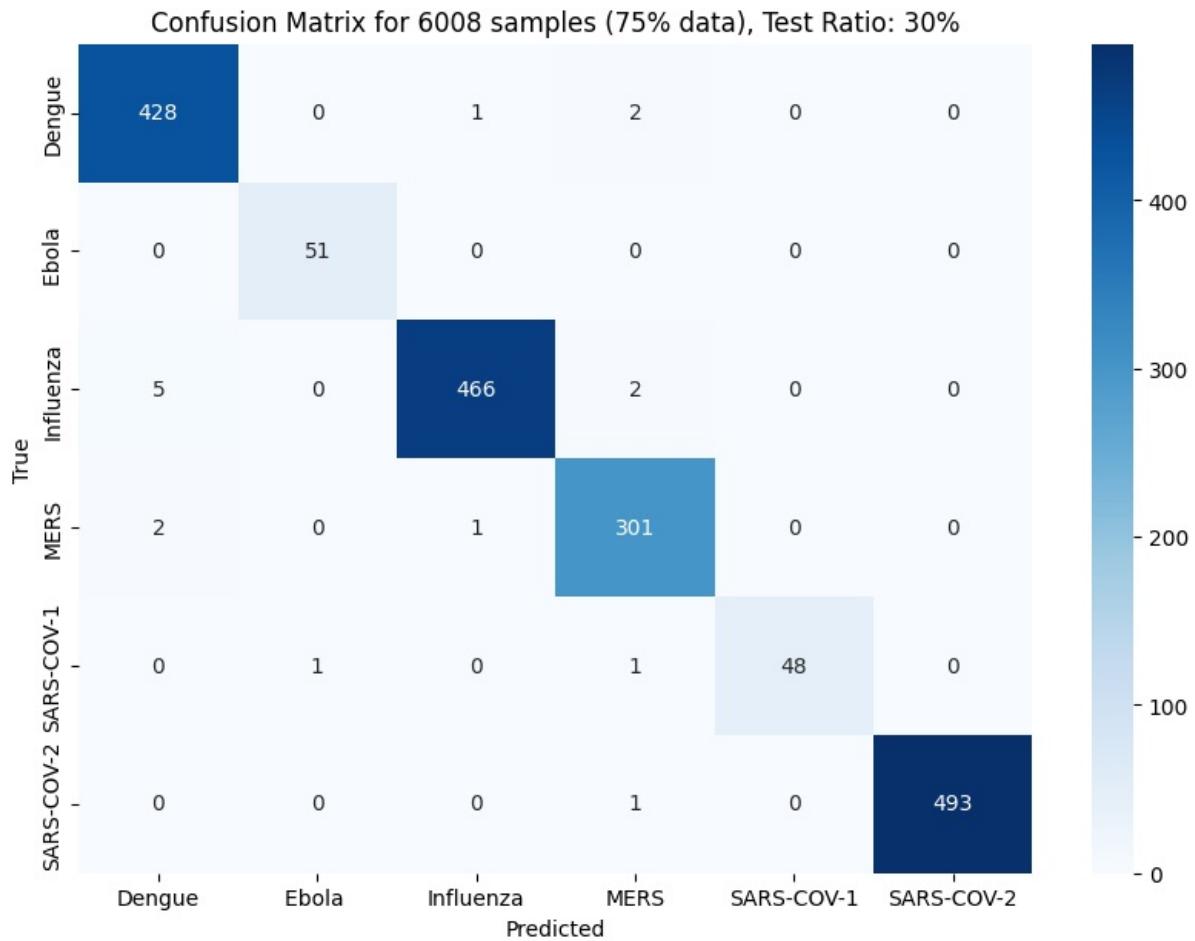
Model Loss for 6008 samples (75% data), Test Ratio: 20%



Data Size: 6008 samples, Test Ratio: 0.3

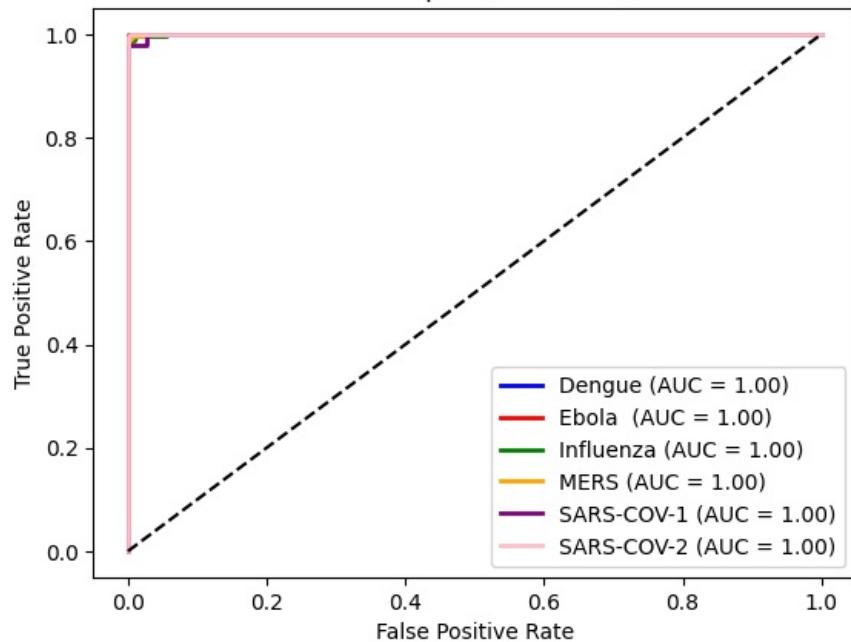
- Accuracy: 0.9911
- Precision: 0.9901
- Recall: 0.9877
- F1_score: 0.9888

Confusion Matrix for 6008 samples (75% data), Test Ratio: 30%

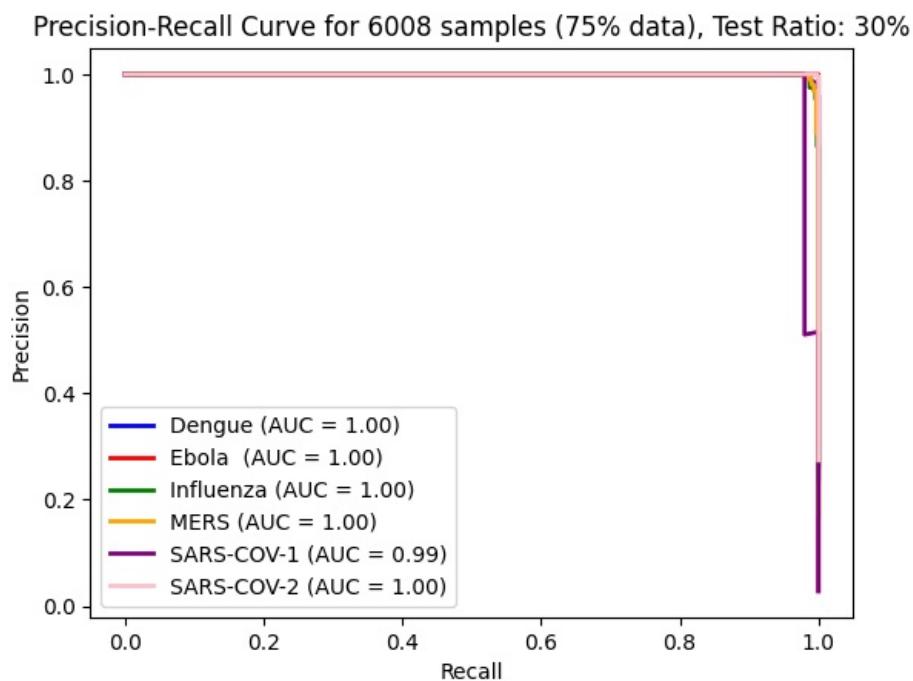


ROC Curve for 6008 samples (75% data), Test Ratio: 30%

ROC Curve for 6008 samples (75% data), Test Ratio: 30%

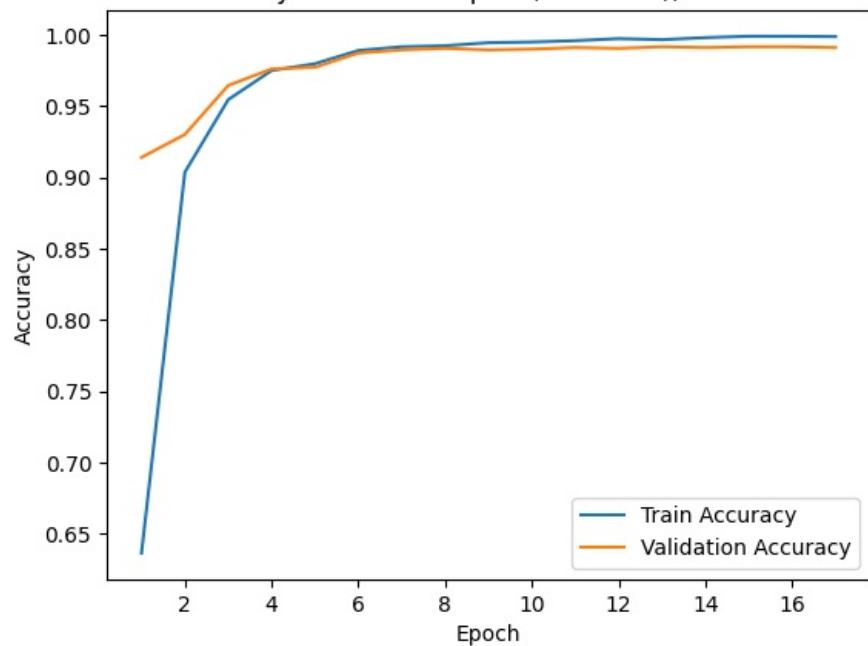


Precision-Recall Curve for 6008 samples (75% data), Test Ratio: 30%

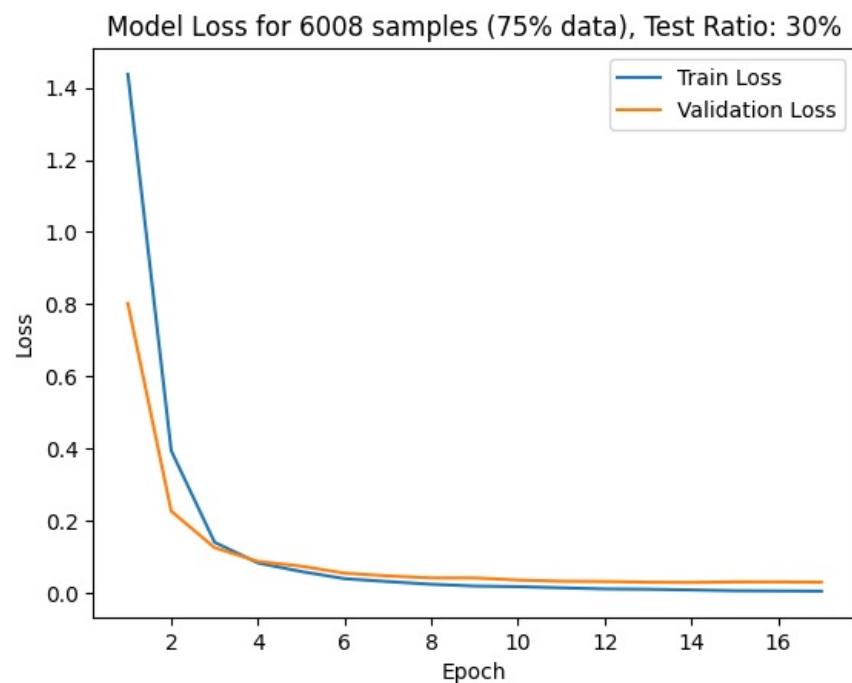


Model Accuracy for 6008 samples (75% data), Test Ratio: 30%

Model Accuracy for 6008 samples (75% data), Test Ratio: 30%



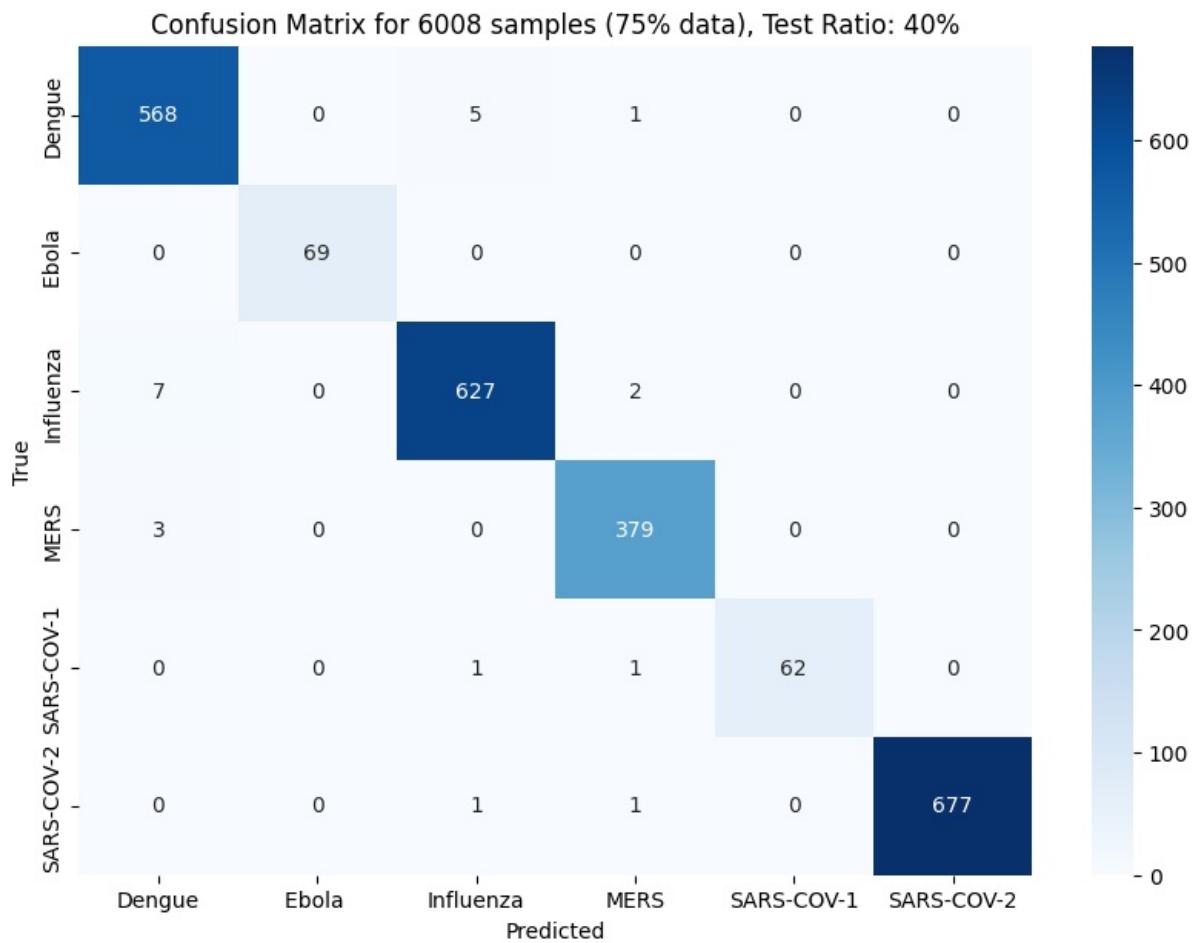
Model Loss for 6008 samples (75% data), Test Ratio: 30%



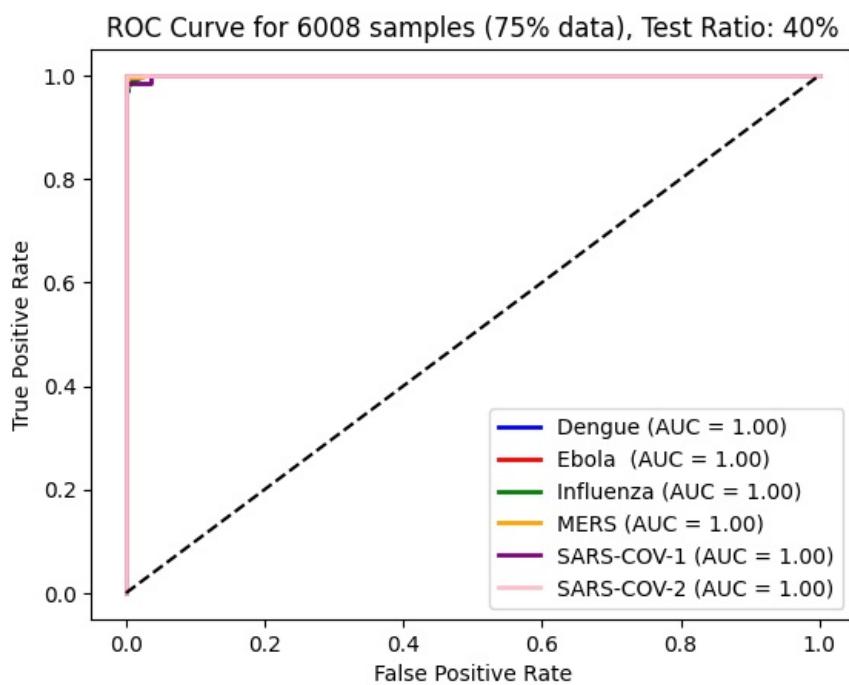
Data Size: 6008 samples, Test Ratio: 0.4

- Accuracy: 0.9908
- Precision: 0.9931
- Recall: 0.9889
- F1_score: 0.9910

Confusion Matrix for 6008 samples (75% data), Test Ratio: 40%

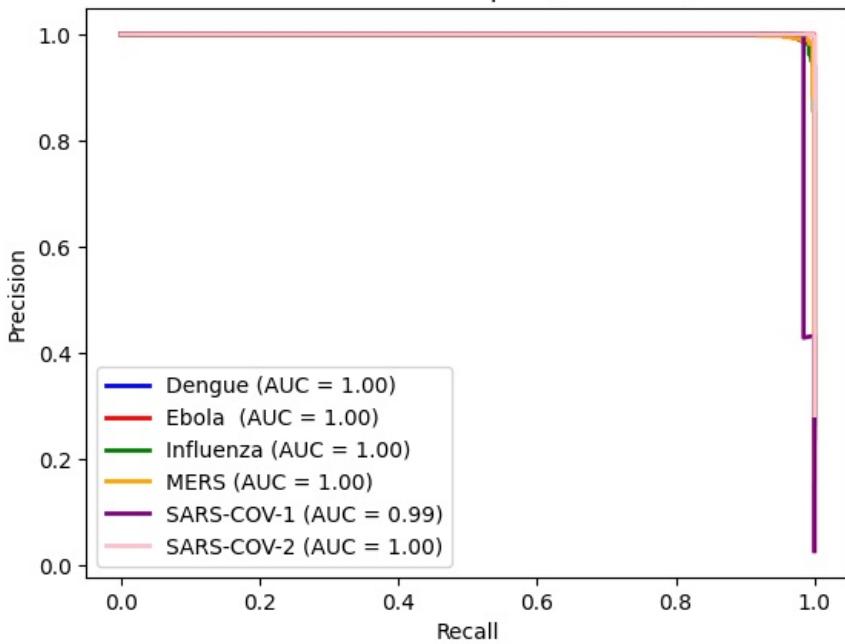


ROC Curve for 6008 samples (75% data), Test Ratio: 40%

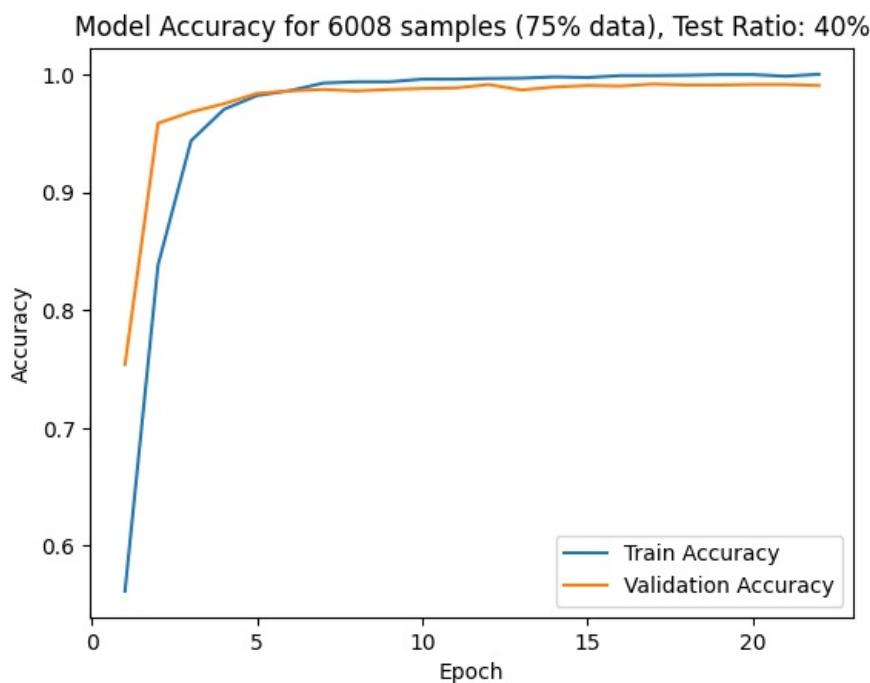


Precision-Recall Curve for 6008 samples (75% data), Test Ratio: 40%

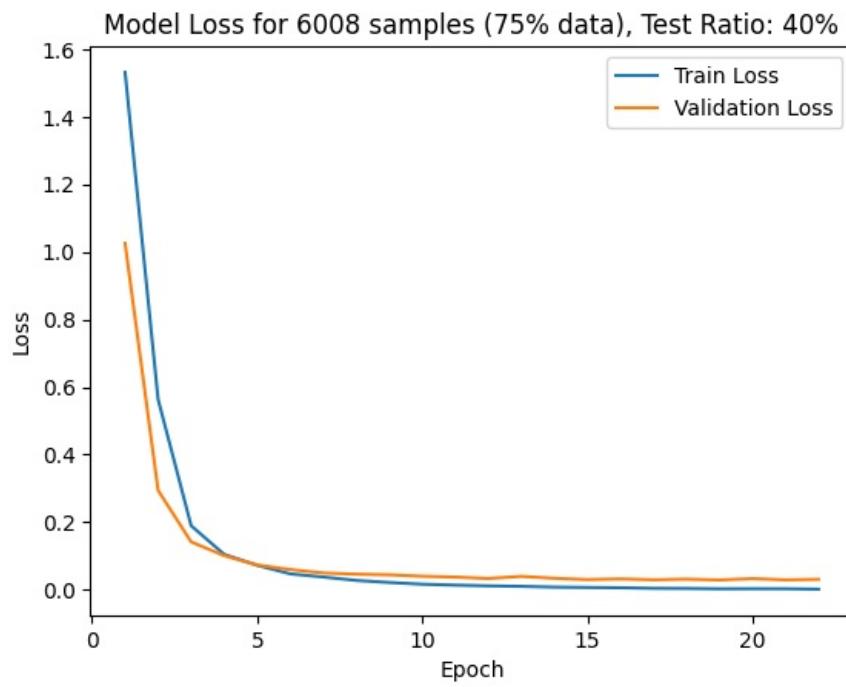
Precision-Recall Curve for 6008 samples (75% data), Test Ratio: 40%



Model Accuracy for 6008 samples (75% data), Test Ratio: 40%



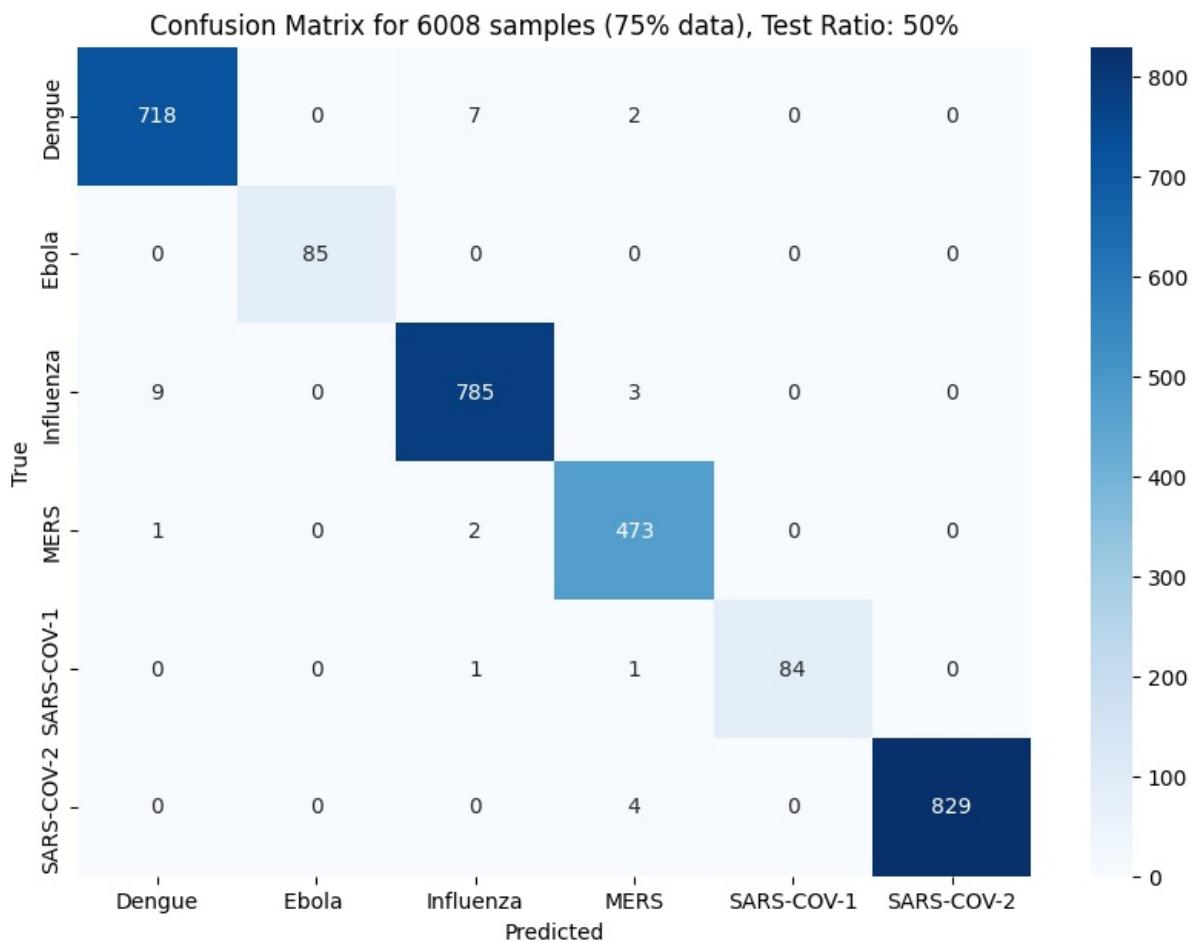
Model Loss for 6008 samples (75% data), Test Ratio: 40%



Data Size: 6008 samples, Test Ratio: 0.5

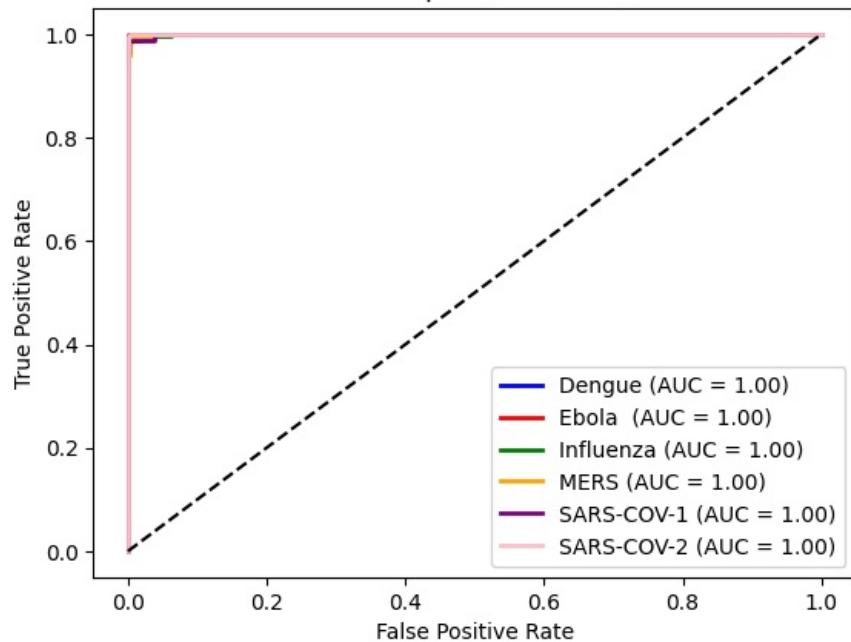
- Accuracy: 0.9900
- Precision: 0.9922
- Recall: 0.9897
- F1_score: 0.9909

Confusion Matrix for 6008 samples (75% data), Test Ratio: 50%

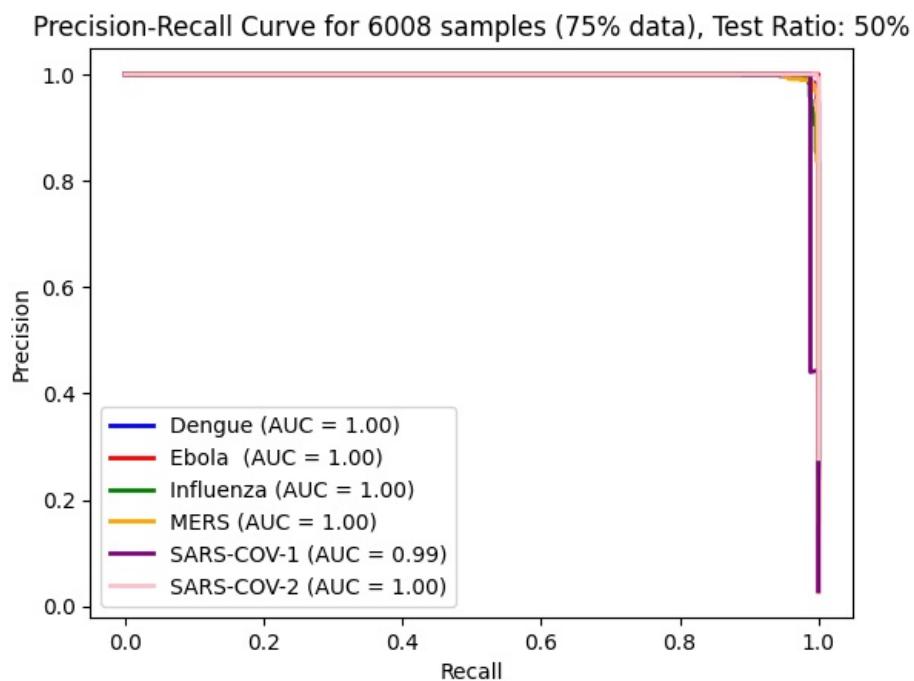


ROC Curve for 6008 samples (75% data), Test Ratio: 50%

ROC Curve for 6008 samples (75% data), Test Ratio: 50%

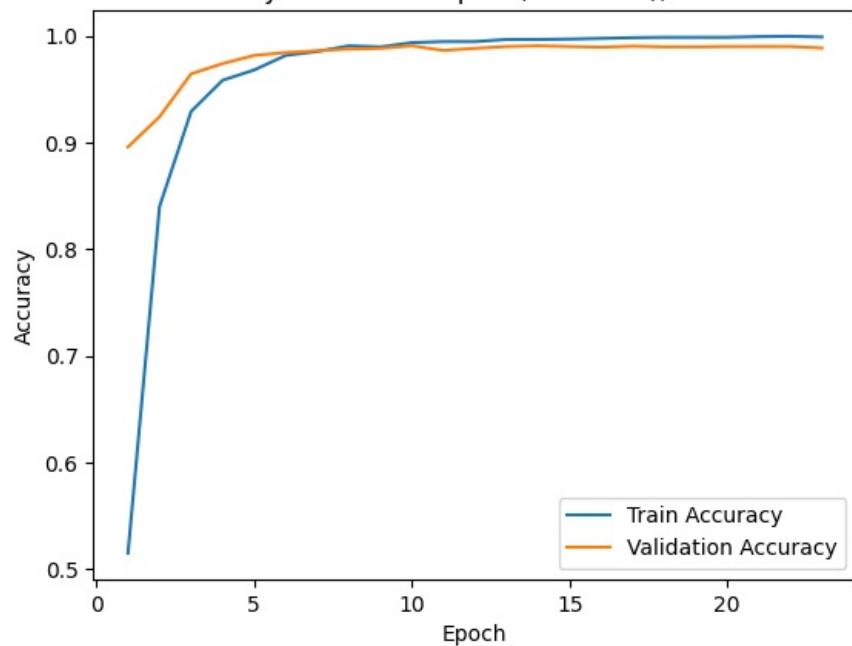


Precision-Recall Curve for 6008 samples (75% data), Test Ratio: 50%

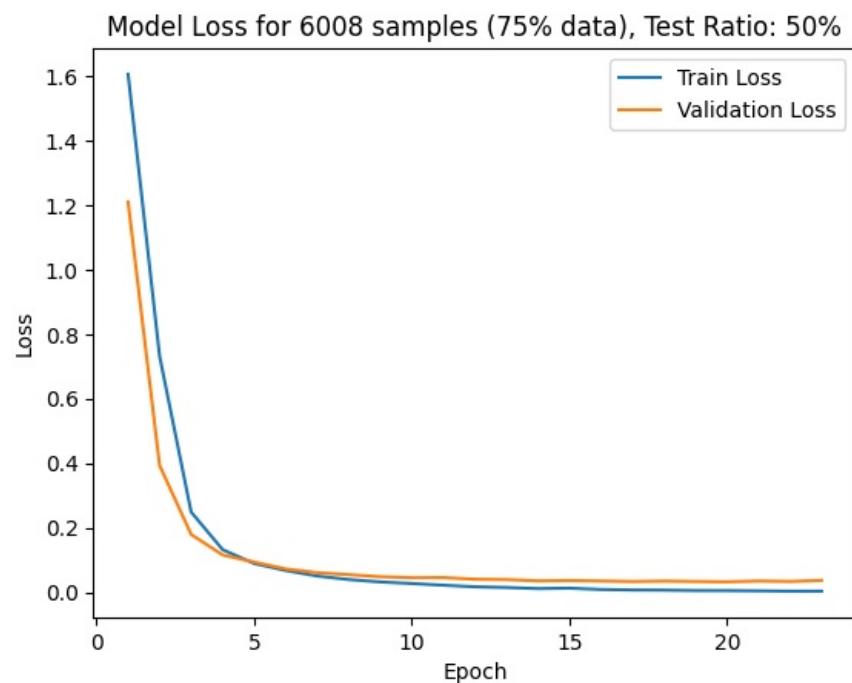


Model Accuracy for 6008 samples (75% data), Test Ratio: 50%

Model Accuracy for 6008 samples (75% data), Test Ratio: 50%



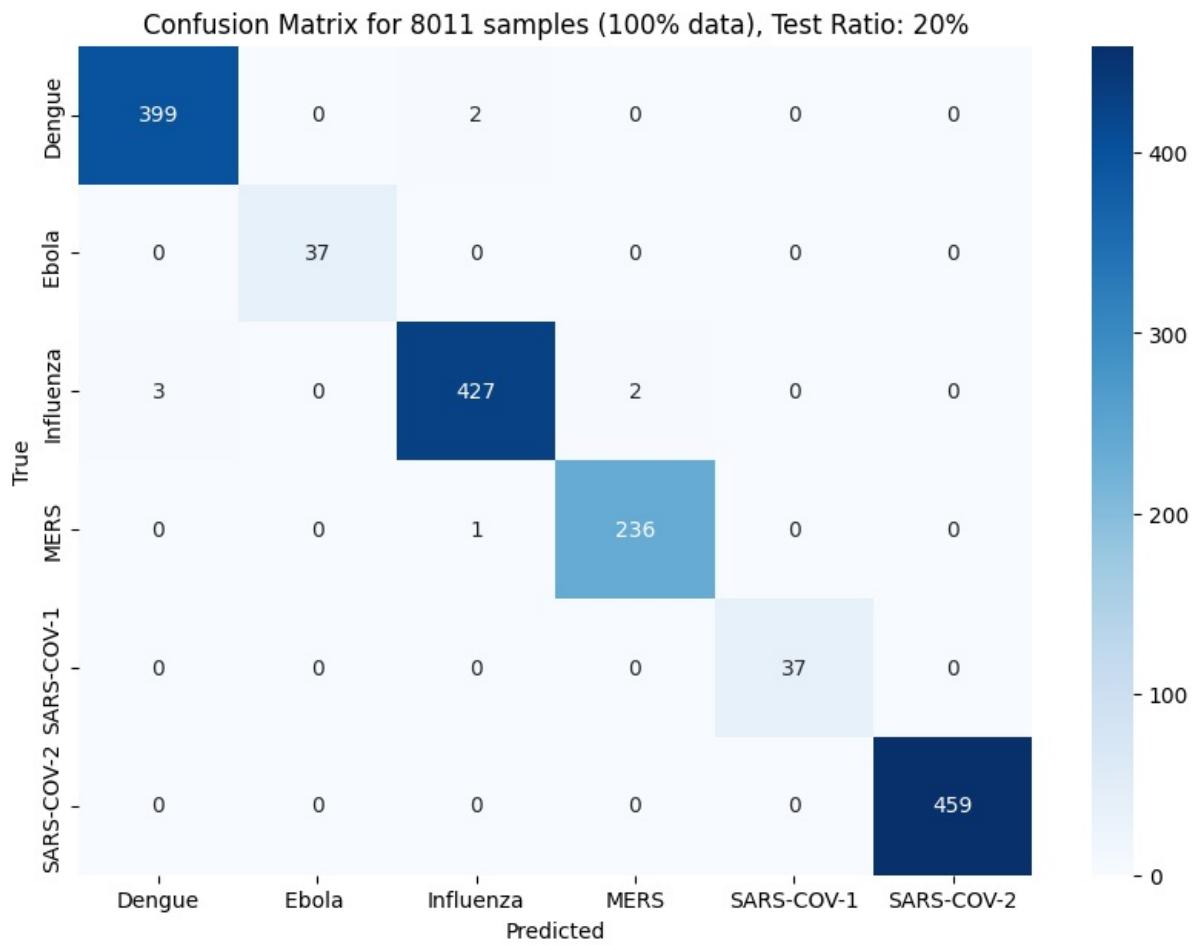
Model Loss for 6008 samples (75% data), Test Ratio: 50%



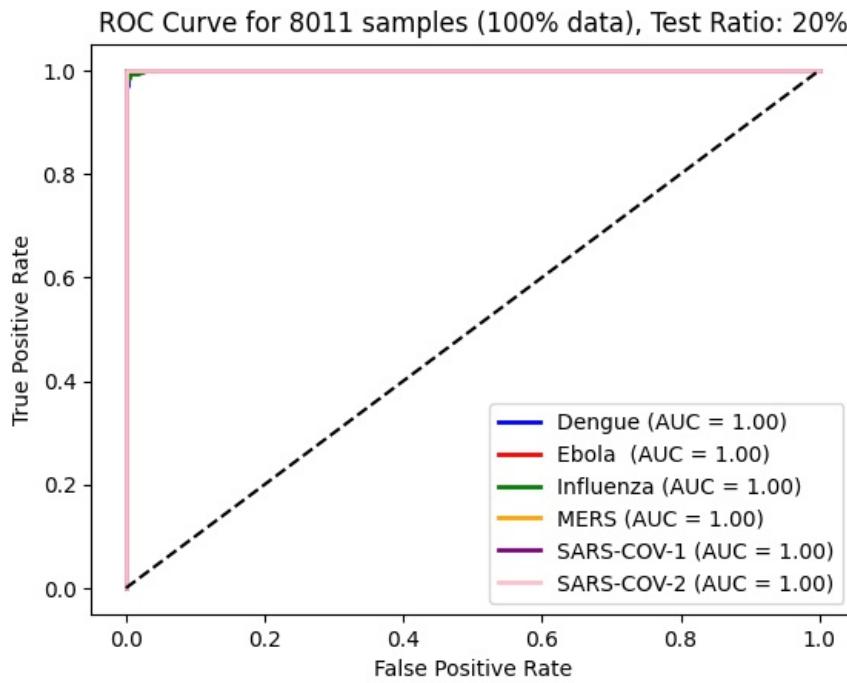
Data Size: 8011 samples, Test Ratio: 0.2

- Accuracy: 0.9950
- Precision: 0.9962
- Recall: 0.9965
- F1_score: 0.9964

Confusion Matrix for 8011 samples (100% data), Test Ratio: 20%

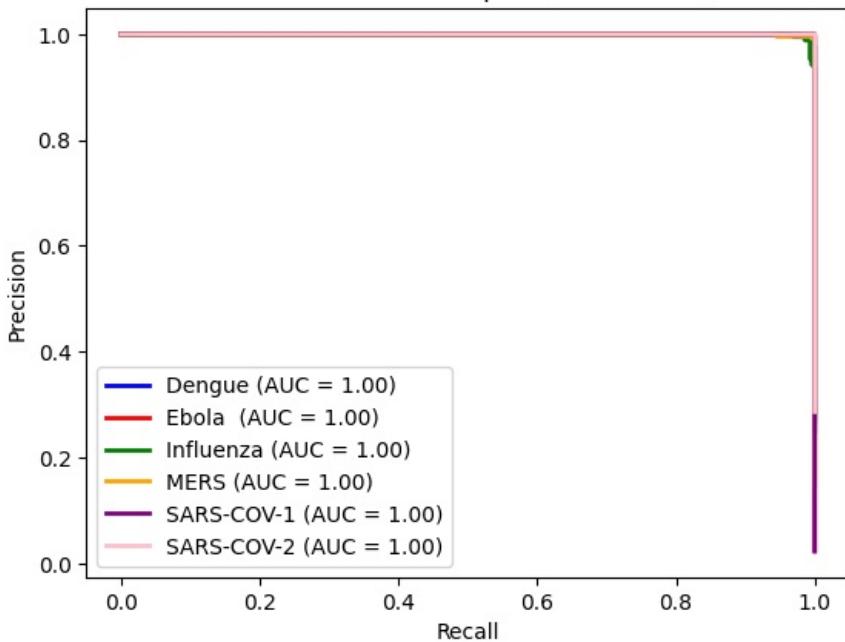


ROC Curve for 8011 samples (100% data), Test Ratio: 20%

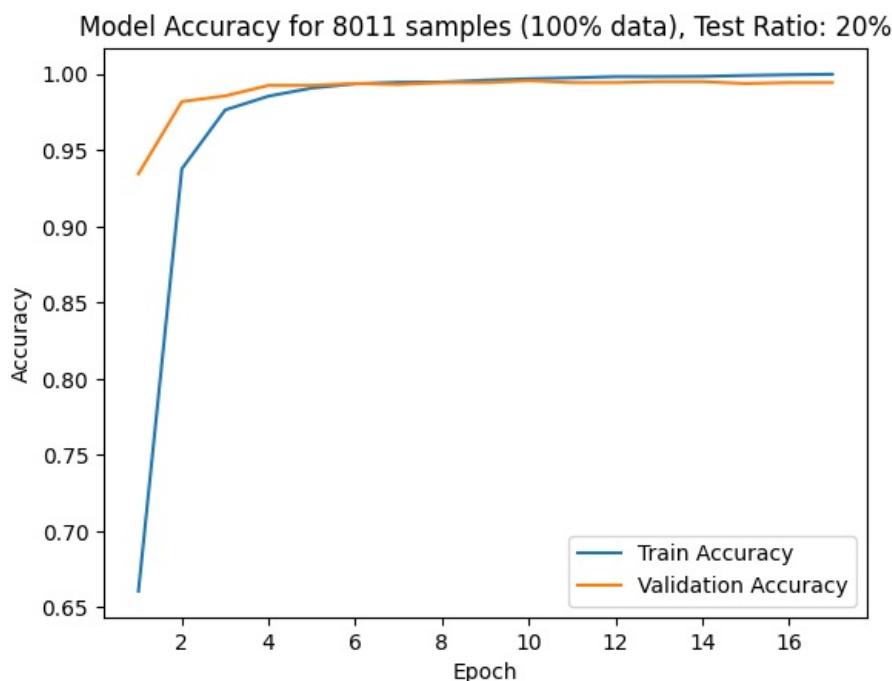


Precision-Recall Curve for 8011 samples (100% data), Test Ratio: 20%

Precision-Recall Curve for 8011 samples (100% data), Test Ratio: 20%

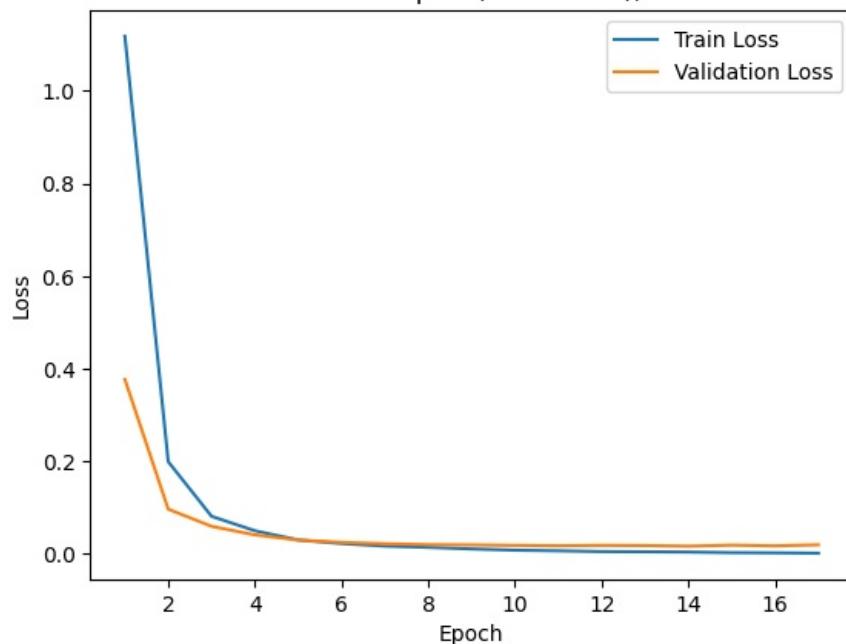


Model Accuracy for 8011 samples (100% data), Test Ratio: 20%



Model Loss for 8011 samples (100% data), Test Ratio: 20%

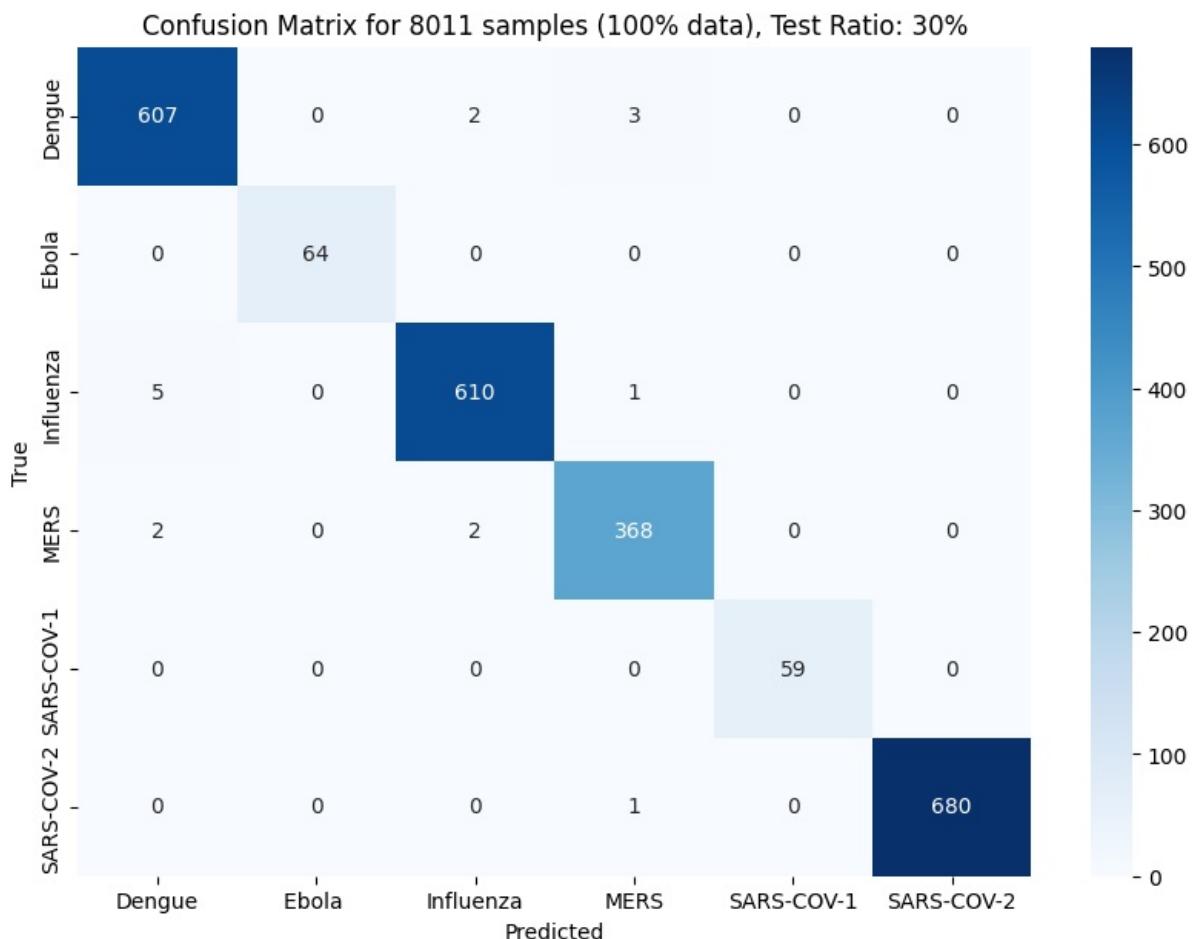
Model Loss for 8011 samples (100% data), Test Ratio: 20%



Data Size: 8011 samples, Test Ratio: 0.3

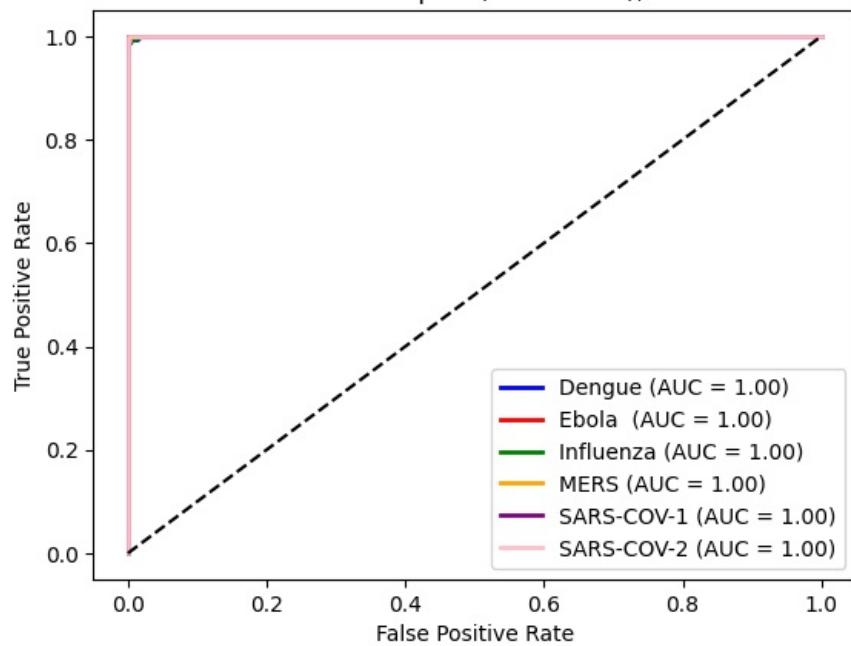
- Accuracy: 0.9933
- Precision: 0.9948
- Recall: 0.9950
- F1_score: 0.9949

Confusion Matrix for 8011 samples (100% data), Test Ratio: 30%

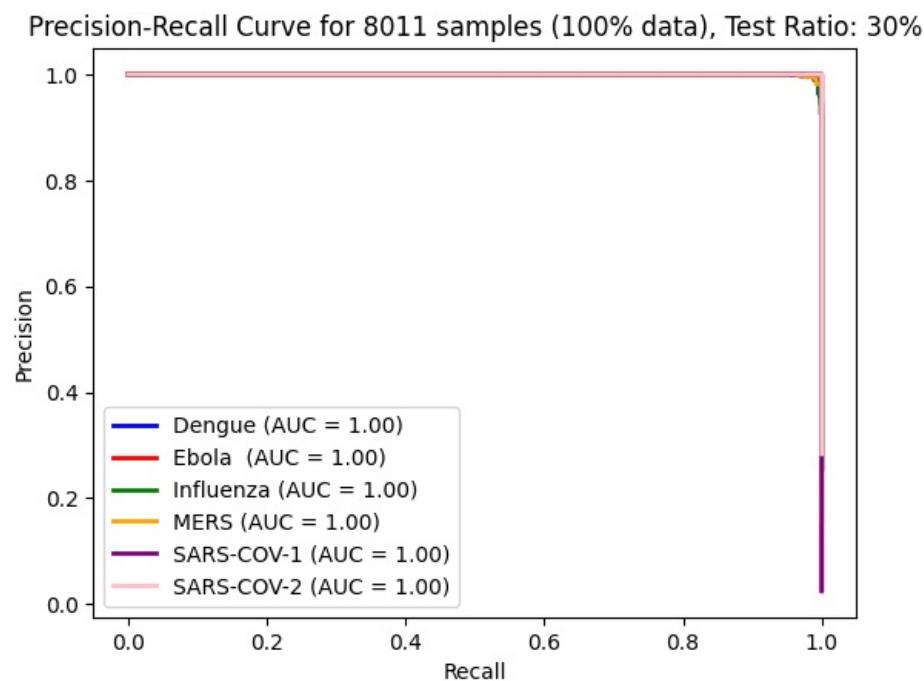


ROC Curve for 8011 samples (100% data), Test Ratio: 30%

ROC Curve for 8011 samples (100% data), Test Ratio: 30%

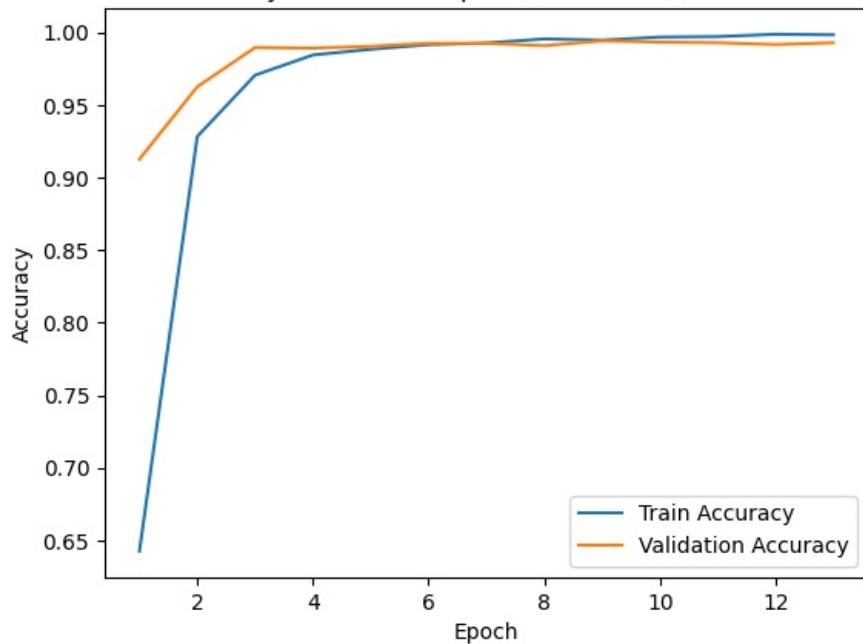


Precision-Recall Curve for 8011 samples (100% data), Test Ratio: 30%

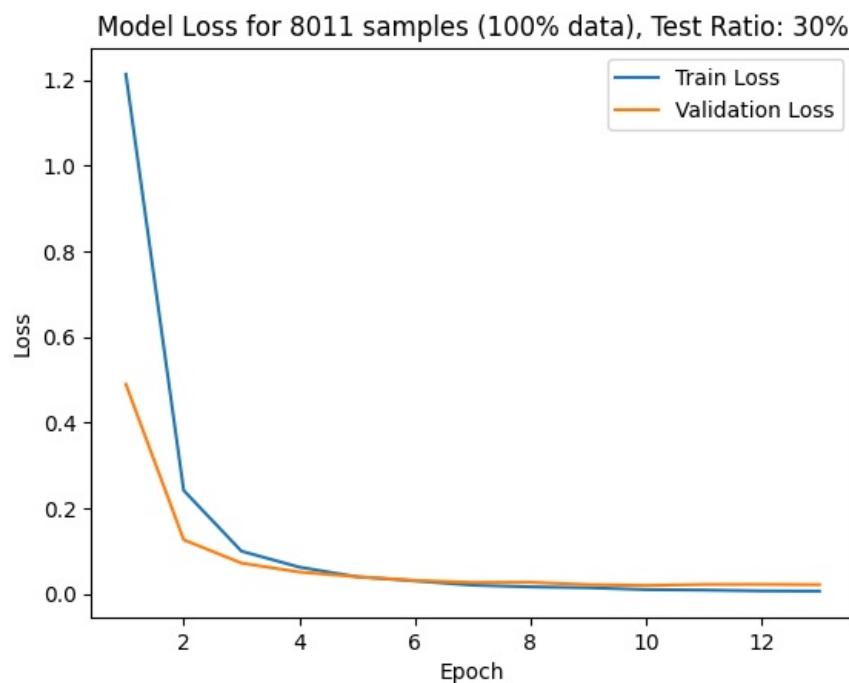


Model Accuracy for 8011 samples (100% data), Test Ratio: 30%

Model Accuracy for 8011 samples (100% data), Test Ratio: 30%



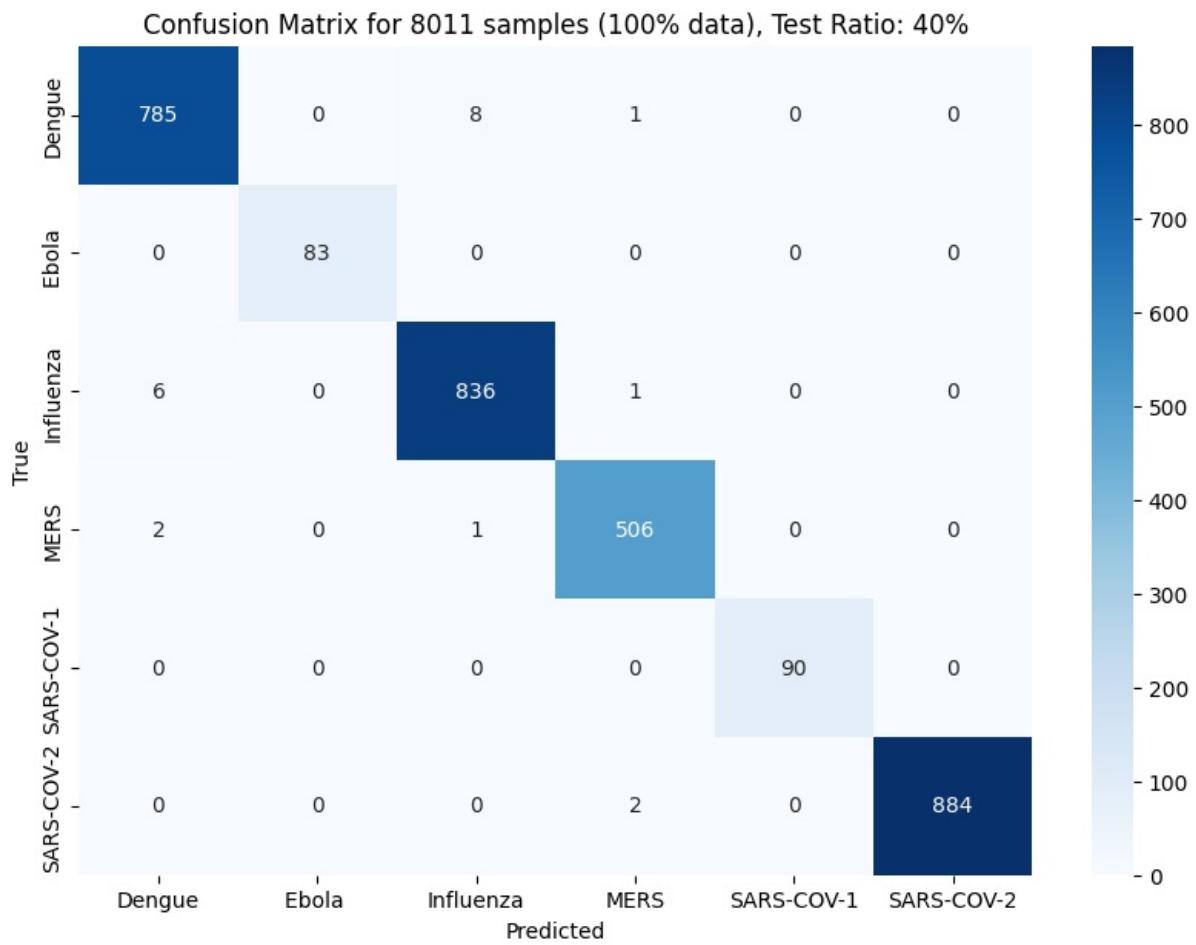
Model Loss for 8011 samples (100% data), Test Ratio: 30%



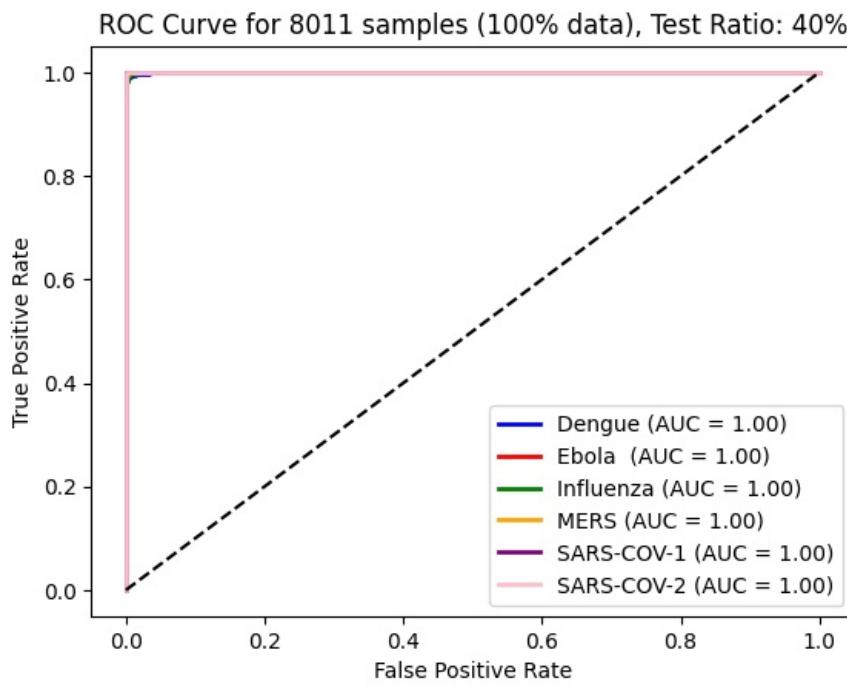
Data Size: 8011 samples, Test Ratio: 0.4

- Accuracy: 0.9934
- Precision: 0.9952
- Recall: 0.9954
- F1_score: 0.9953

Confusion Matrix for 8011 samples (100% data), Test Ratio: 40%

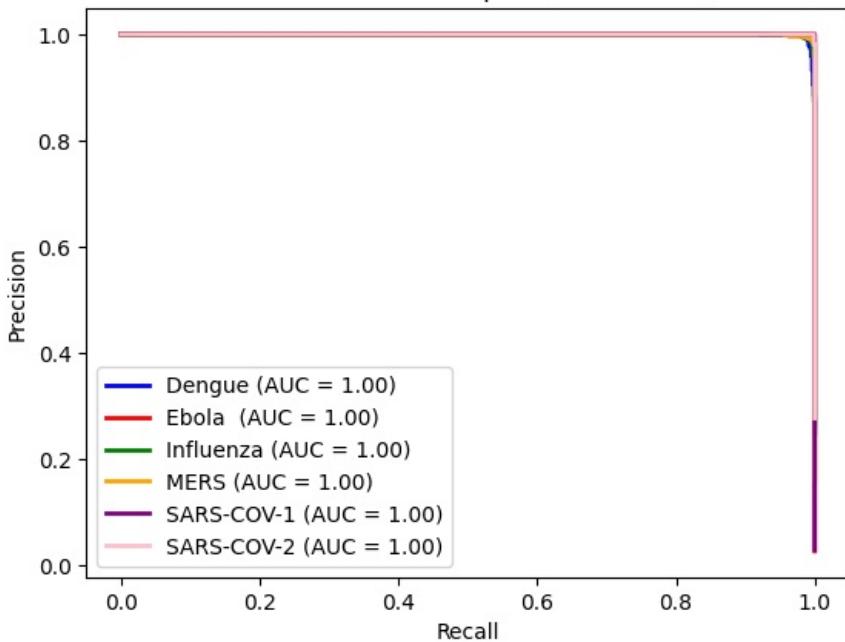


ROC Curve for 8011 samples (100% data), Test Ratio: 40%

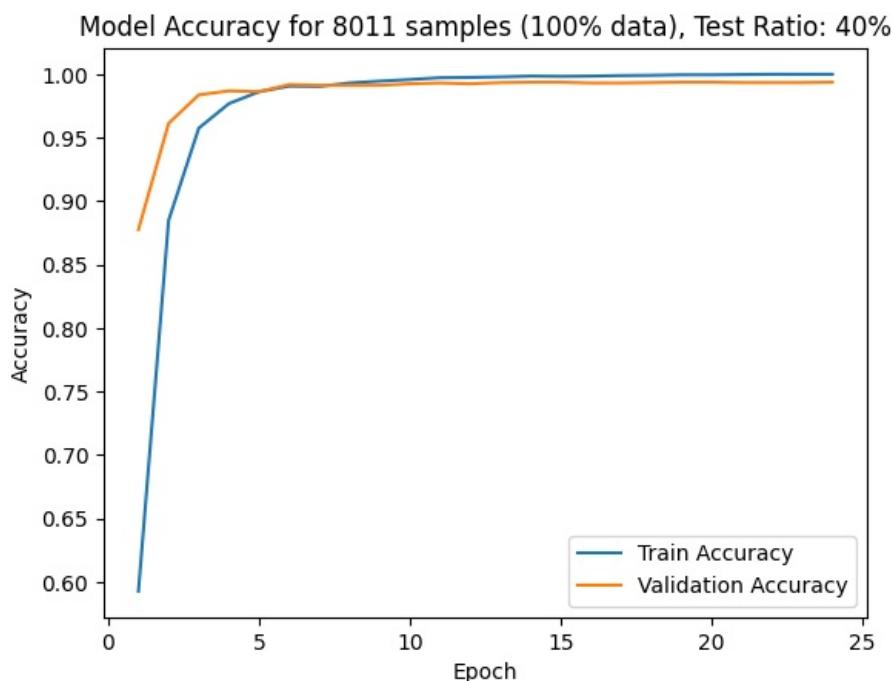


Precision-Recall Curve for 8011 samples (100% data), Test Ratio: 40%

Precision-Recall Curve for 8011 samples (100% data), Test Ratio: 40%

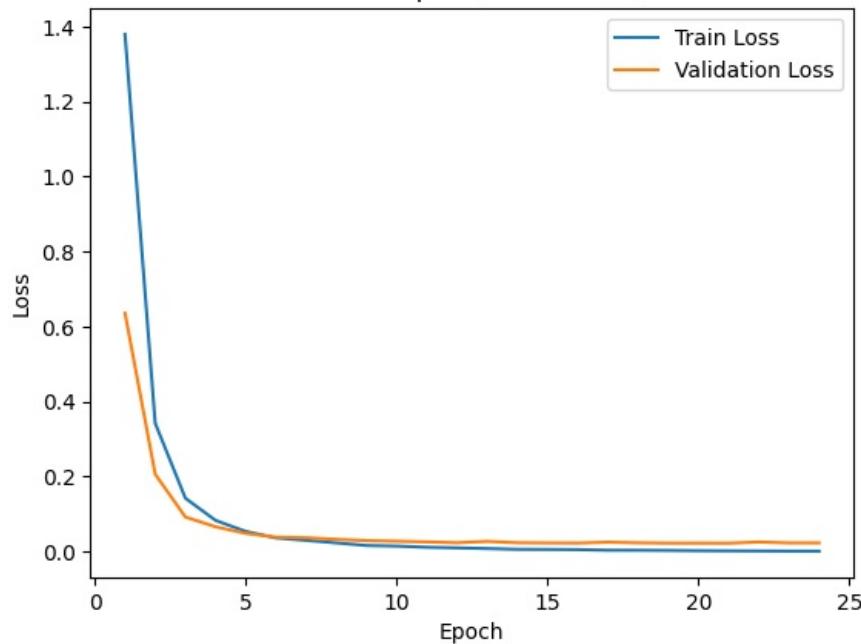


Model Accuracy for 8011 samples (100% data), Test Ratio: 40%



Model Loss for 8011 samples (100% data), Test Ratio: 40%

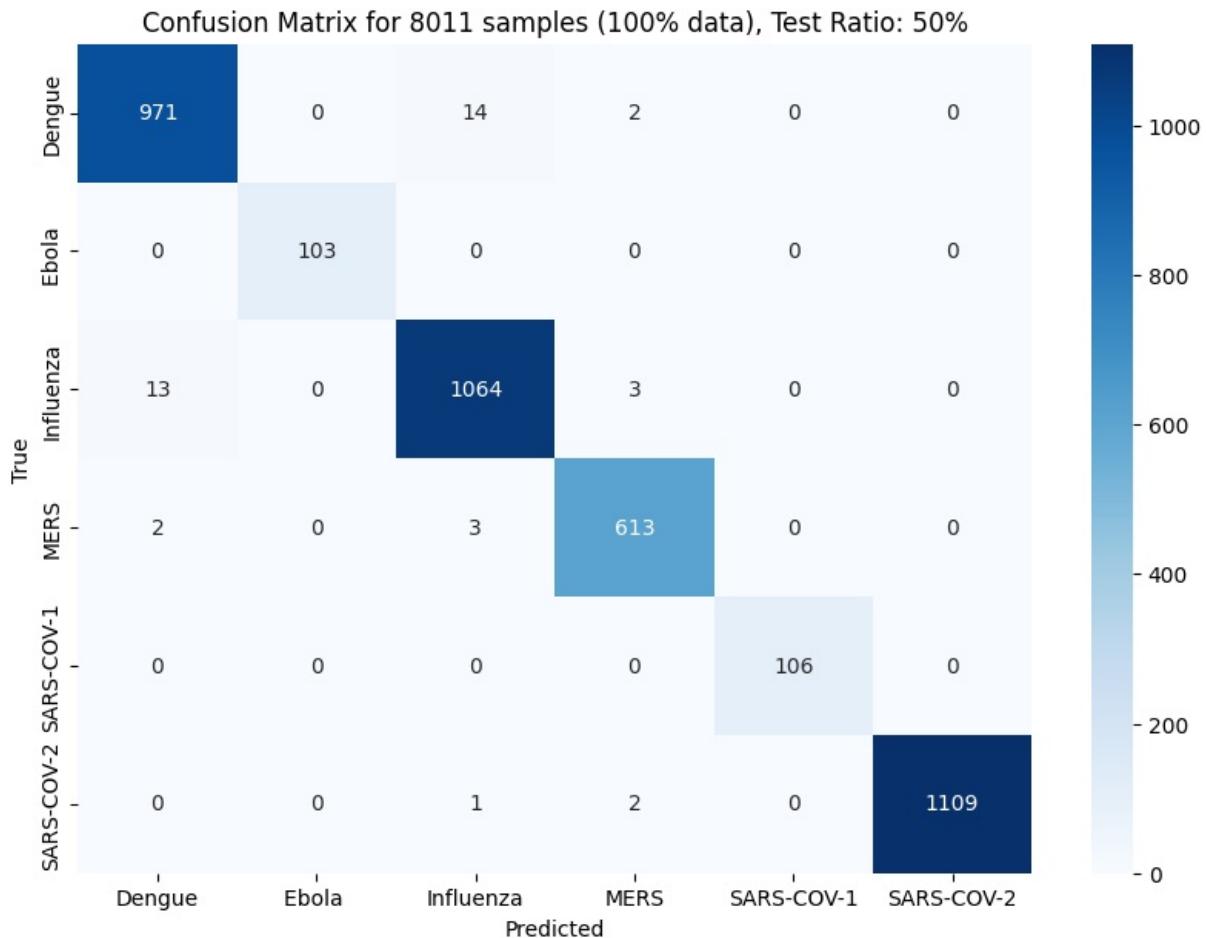
Model Loss for 8011 samples (100% data), Test Ratio: 40%



Data Size: 8011 samples, Test Ratio: 0.5

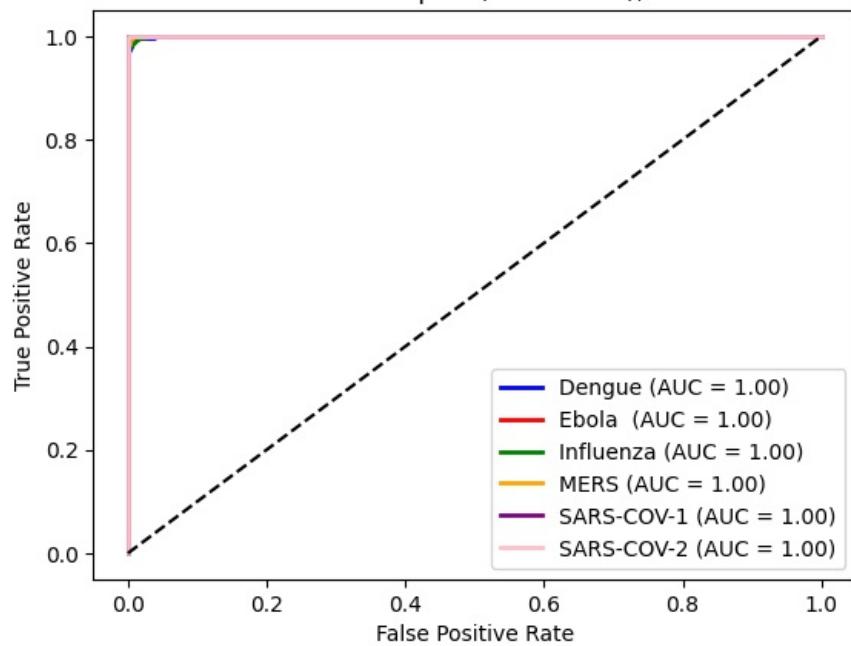
- Accuracy: 0.9900
- Precision: 0.9928
- Recall: 0.9930
- F1_score: 0.9929

Confusion Matrix for 8011 samples (100% data), Test Ratio: 50%

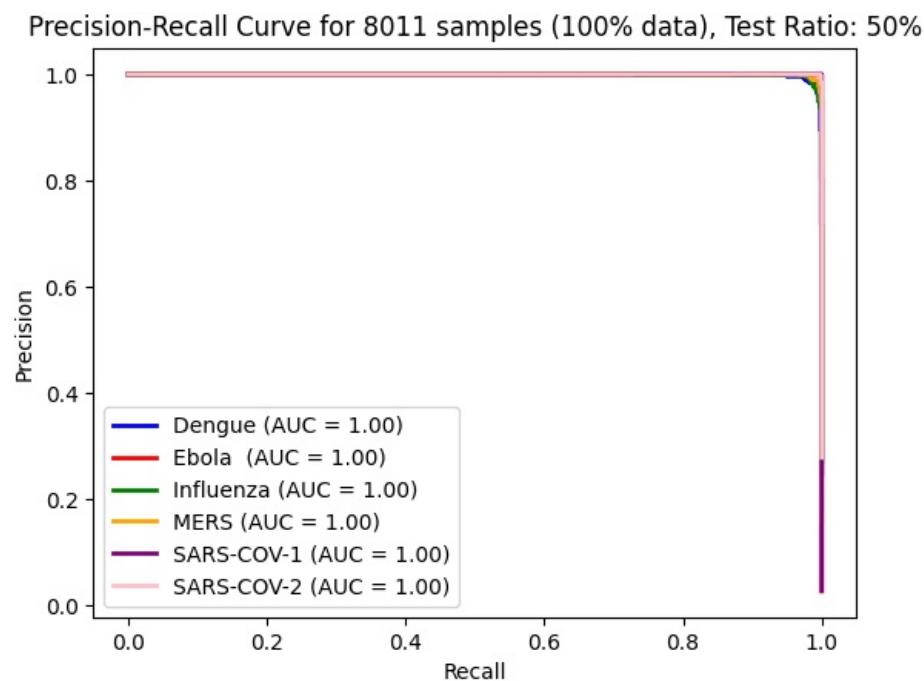


ROC Curve for 8011 samples (100% data), Test Ratio: 50%

ROC Curve for 8011 samples (100% data), Test Ratio: 50%

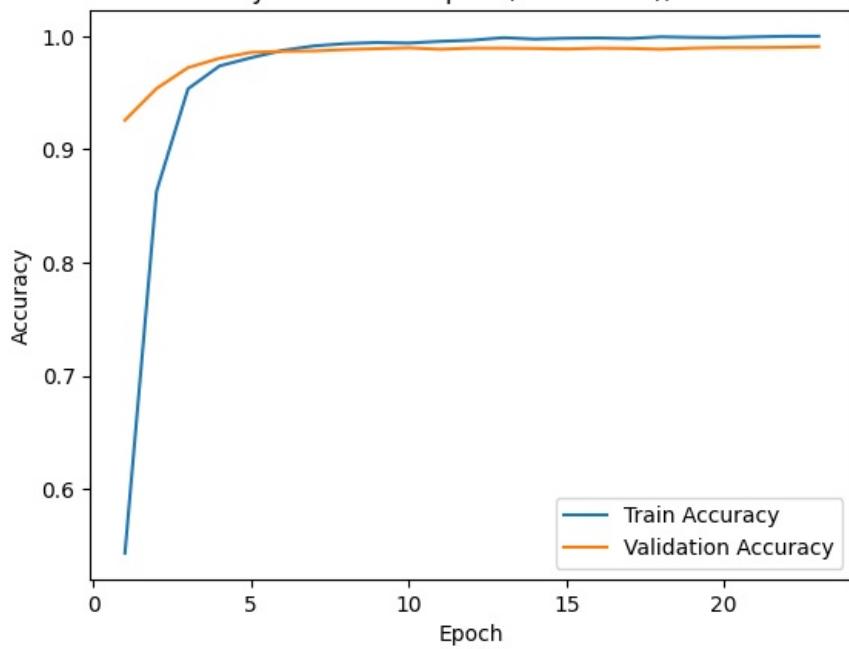


Precision-Recall Curve for 8011 samples (100% data), Test Ratio: 50%



Model Accuracy for 8011 samples (100% data), Test Ratio: 50%

Model Accuracy for 8011 samples (100% data), Test Ratio: 50%



Model Loss for 8011 samples (100% data), Test Ratio: 50%

