Final Models

|  |  |  |  |
| --- | --- | --- | --- |
| OMI Model | CNN | RF | Fusion |
| Rule Out Thresh  Sens > 0.90 | 0.17 | 0.28 | 0.04 |
| Rule In Thresh  PPV > 0.85 | 0.92 | 0.65 | 0.46 |
| F1 Thresh | 0.72 | 0.56 | 0.35 |
| Val AUC | 0.945  [0.913,0.972] | 0.943 [0.907,0.972] | 0.949 [0.918,0.976] |
| Val AP | 0.779  [0.679,0.867] | 0.704 [0.579,0.829] | 0.782 [0.680,0.872] |
| Val F1 | 0.765  [0.679,0.841] | 0.699 [0.593,0.794] | 0.766 [0.667,0.844] |
| Val Sens | 0.772  [0.654,0.877] | 0.632 [0.508,0.754] | 0.719 [0.597,0.830] |
| Val Spec | 0.980  [0.968,0.990] | 0.985 [0.977,0.993] | 0.987 [0.978,0.994] |
| Val Acc | 0.964  [0.950,0.977] | 0.958 [0.945,0.970] | 0.966 [0.953,0.978] |
| Val PPV | 0.759  [0.651,0.863] | 0.783 [0.667,0.896] | 0.820 [0.709,0.917] |
| Val NPV | 0.981  [0.970,0.990] | 0.970 [0.956,0.981] | 0.977 [0.965,0.987] |
| Test AUC | 0.939  [0.900,0.971] | 0.926 [0.875,0.965] | 0.939 [0.894,0.974] |
| Test AP | 0.819  [0.730,0.899] | 0.812 [0.717,0.889] | 0.838 [0.755,0.911] |
| Test F1 | 0.746  [0.650,0.823] | 0.750 [0.646,0.833] | 0.790 [0.708,0.866] |
| Test Sens | 0.758  [0.644,0.860] | 0.629 [0.500,0.750] | 0.758 [0.649,0.862] |
| Test Spec | 0.975  [0.963,0.985] | 0.996 [0.990,1.000] | 0.985 [0.976,0.994] |
| Test Acc | 0.957  [0.941,0.970] | 0.965 [0.953,0.977] | 0.966 [0.954,0.980] |
| Test PPV | 0.734  [0.623,0.833] | 0.929 [0.844,1.000] | 0.825 [0.727,0.926] |
| Test NPV | 0.978  [0.966,0.988] | 0.967 [0.954,0.980] | 0.978 [0.967,0.988] |
| High Confidence - | 537 (6) | 574 (9) | 573 (8) |
| Low Confidence - | 140 (9) | 125 (14) | 111 (7) |
| Low Confidence + | 23 (9) | 5 (2) | 9 (3) |
| High Confidence + | 41 (38) | 37 (37) | 48 (44) |

|  |  |  |  |
| --- | --- | --- | --- |
| ACS Model | CNN | RF | Fusion |
| Rule Out Thresh  Sens > 0.90 | 0.20 | 0.24 | 0.07 |
| Rule In Thresh  PPV > 0.85 | 0.88 | 0.64 | 0.57 |
| F1 Thresh | 0.64 | 0.46 | 0.31 |
| Val AUC | 0.867 [0.833,0.904] | 0.861 [0.823,0.895] | 0.884 [0.851,0.915] |
| Val AP | 0.687 [0.612,0.761] | 0.663 [0.587,0.738] | 0.711 [0.637,0.781] |
| Val F1 | 0.632 [0.559,0.703] | 0.581 [0.500,0.656] | 0.658 [0.581,0.729] |
| Val Sens | 0.595 [0.504,0.686] | 0.545 [0.451,0.636] | 0.620 [0.530,0.712] |
| Val Spec | 0.943 [0.925,0.962] | 0.935 [0.917,0.953] | 0.948 [0.930,0.965] |
| Val Acc | 0.886 [0.862,0.908] | 0.872 [0.847,0.895] | 0.895 [0.873,0.916] |
| Val PPV | 0.673 [0.588,0.765] | 0.623 [0.536,0.721] | 0.701 [0.618,0.782] |
| Val NPV | 0.923 [0.901,0.944] | 0.913 [0.889,0.934] | 0.927 [0.907,0.947] |
| Test AUC | 0.855 [0.811,0.897] | 0.870 [0.829,0.906] | 0.878 [0.838,0.915] |
| Test AP | 0.706 [0.631,0.774] | 0.710 [0.638,0.779] | 0.732 [0.662,0.799] |
| Test F1 | 0.626 [0.551,0.690] | 0.603 [0.524,0.677] | 0.645 [0.571,0.712] |
| Test Sens | 0.608 [0.517,0.692] | 0.560 [0.473,0.651] | 0.648 [0.560,0.731] |
| Test Spec | 0.932 [0.912,0.952] | 0.940 [0.918,0.958] | 0.927 [0.905,0.948] |
| Test Acc | 0.877 [0.853,0.900] | 0.876 [0.852,0.900] | 0.880 [0.854,0.903] |
| Test PPV | 0.644 [0.556,0.734] | 0.654 [0.561,0.747] | 0.643 [0.558,0.731] |
| Test NPV | 0.921 [0.900,0.941] | 0.913 [0.892,0.936] | 0.928 [0.908,0.948] |
| High Confidence - | 391 (16) | 373 (13) | 406 (15) |
| Low Confidence - | 232 (33) | 261 (42) | 209 (29) |
| Low Confidence + | 57 (21) | 59 (24) | 61 (24) |
| High Confidence + | 61 (55) | 48 (46) | 65 (57) |

ECGSMARTRF (OMI no age/sex)

Best threshold: 0.61

Best threshold: 0.2

Best threshold: 0.55

Val AUC CI: 0.906 [0.856,0.951]

Val AP CI: 0.694 [0.568,0.810]

Val F1 CI: 0.680 [0.571,0.774]

Val Sens CI: 0.614 [0.484,0.745]

Val Spec CI: 0.984 [0.974,0.993]

Val Acc CI: 0.955 [0.941,0.969]

Val PPV CI: 0.761 [0.636,0.885]

Val NPV CI: 0.968 [0.954,0.980]

Test AUC CI: 0.918 [0.864,0.962]

Test AP CI: 0.798 [0.706,0.876]

Test F1 CI: 0.745 [0.644,0.830]

Test Sens CI: 0.661 [0.540,0.781]

Test Spec CI: 0.990 [0.981,0.997]

Test Acc CI: 0.962 [0.947,0.976]

Test PPV CI: 0.854 [0.750,0.949]

Test NPV CI: 0.970 [0.957,0.983]

High Confidence - 454 ( 5 )

Low Confidence - 239 ( 16 )

Low Confidence + 9 ( 3 )

High Confidence + 39 ( 38 )

ECGSMARTRF (ACS no age/sex)

Best threshold: 0.64

Best threshold: 0.21

Best threshold: 0.53

Val AUC CI: 0.842 [0.799,0.882]

Val AP CI: 0.649 [0.574,0.728]

Val F1 CI: 0.577 [0.497,0.663]

Val Sens CI: 0.463 [0.375,0.554]

Val Spec CI: 0.973 [0.959,0.985]

Val Acc CI: 0.889 [0.865,0.911]

Val PPV CI: 0.767 [0.677,0.866]

Val NPV CI: 0.903 [0.878,0.925]

Test AUC CI: 0.850 [0.807,0.890]

Test AP CI: 0.690 [0.616,0.760]

Test F1 CI: 0.584 [0.505,0.663]

Test Sens CI: 0.472 [0.386,0.562]

Test Spec CI: 0.971 [0.955,0.983]

Test Acc CI: 0.887 [0.864,0.911]

Test PPV CI: 0.766 [0.667,0.859]

Test NPV CI: 0.901 [0.879,0.923]

High Confidence - 323 ( 15 )

Low Confidence - 341 ( 51 )

Low Confidence + 21 ( 9 )

High Confidence + 56 ( 50 )