**Supplementary Table S2(a)**: results for sampling ratio 1:1 and 1:2 for each model of PROMIS using test set.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Models | ratio 1:1 | | | | | ratio 1:2 | | | | |
| FPR | Precision | F-Measure | Accuracy | AUC | FPR | Precision | F-Measure | Accuracy | AUC |
| MoRFbi-1 | 0.212 | 0.0455 | 0.083 | 0.781 | 0.734 | **0.156** | **0.0611** | **0.108** | **0.837** | **0.760** |
| MoRFbi-2 | **0.250** | **0.039** | **0.072** | **0.742** | **0.689** | 0.253 | 0.039 | 0.072 | 0.740 | 0.652 |
| MoRFwin | **0.150** | **0.0637** | **0.113** | **0.843** | **0.769** | 0.159 | 0.060 | 0.107 | 0.834 | 0.738 |

FPR, precision, F-measure and accuracy are reported for TPR of 0.50. A model is assumed to perform well if increasing the sampling ratio, FPR decreases and accuracy increases for the same values of TPR. This was only observed for MoRFbi-1, however, for MoRFbi-2 and MoRFwin, increasing the sampling ratio, the FPR and accuracy was not improved. Therefore, PROMIS was developed using MoRFbi-1 with sampling ration 1:2, MoRFbi-2 and MoRFwin with sampling ration 1:1.

**Supplementary Table S2(b)**: results for PROMIS and OPAL using test set.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Predictors | FPR | Precision | F-Measure | Accuracy | AUC |
| PROMIS | 0.157 | 0.061 | 0.108 | 0.836 | 0.790 |
| OPAL | 0.100 | 0.090 | 0.150 | 0.890 | 0.815 |

FPR, precision, F-measure and accuracy are reported for TPR of 0.50. When three models selected in supplementary Table S2(a) are combined, the results for PROMIS is improved and same is practiced for OPAL, when PROMIS and MoRFchibi are combined.