|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Methods** | **Mcc** | **G-Mean** | **Roc** | **Sensitivity** | **Specificity** | **Precision** | **Accuracy** | **F1-Score** |
| NO SAMPLING | 44.047 | 51.476 | 69.416 | 41.688 | **97.144** | 58.864 | 92.891 | 45.247 |
| SMOTE | 47.869 | 64.136 | 74.225 | 54.580 | 93.870 | 53.198 | 91.276 | 51.656 |
| ADASYN | 47.496 | 63.394 | 73.758 | 53.948 | 93.567 | 51.841 | 90.948 | 50.390 |
| RUS | 45.937 | 78.625 | 80.514 | 81.843 | 79.185 | 41.580 | 79.456 | 48.569 |
| NC | 46.094 | 57.956 | 72.548 | 51.535 | 93.562 | **55.065** | 91.732 | 49.615 |
| CNN | 44.920 | 61.155 | 73.192 | 54.668 | 91.715 | 50.574 | 90.105 | 49.104 |
| SMOTE-ENN | 47.381 | 71.001 | 76.860 | 64.274 | 89.445 | 49.836 | 88.439 | 52.486 |
| SMOTE-TOMEK | 47.672 | 63.214 | 73.728 | 53.742 | 93.714 | 52.790 | 91.018 | 50.520 |
| OVER-BAGGING | 42.325 | 51.665 | 69.128 | 41.887 | 96.370 | 54.982 | **92.117** | 44.593 |
| SMOTE-BAGGING | 44.463 | 56.839 | 71.123 | 46.885 | 95.361 | 53.819 | 91.757 | 47.720 |
| BALANCED-BAGGING | 45.823 | 75.662 | 78.169 | 71.092 | 85.245 | 44.184 | 83.909 | 49.237 |
| OVER-BOOSTING | 47.590 | 69.911 | 76.193 | 62.021 | 90.366 | 49.660 | 88.606 | 51.650 |
| RUSBOOST | 41.037 | 68.597 | 74.313 | 62.245 | 86.382 | 43.113 | 84.640 | 46.212 |
| EASY ENSEMBLE | 44.325 | 78.674 | 80.425 | **82.604** | 78.246 | 39.554 | 78.687 | 47.105 |
| BRF | 47.031 | 79.244 | 81.044 | 81.776 | 80.312 | 42.065 | 80.514 | 49.095 |
| iBRF (proposed) | **53.042** | **79.923** | **82.260** | 78.931 | 85.589 | 48.709 | 85.880 | **55.002** |