Random Forests

Joanna Grzyb

No Institute Given

1 Introduction

Table 1. Results – *Accuracy*

ID	DT	RandomFS	randomforest	RFDT	RF sklearn
1	0.885 ± 0.027	0.933 ± 0.035	0.940 ± 0.024	0.953 ± 0.034	$\mathbf{0.955 \pm 0.017}$
2	0.480 ± 0.041	$\mathbf{0.564 \pm 0.015}$	0.555 ± 0.024	0.554 ± 0.031	0.553 ± 0.021
3	0.714 ± 0.037	0.750 ± 0.052	0.769 ± 0.030	0.790 ± 0.015	$\mathbf{0.795 \pm 0.030}$
4	0.875 ± 0.026	0.912 ± 0.017	0.920 ± 0.020	0.922 ± 0.018	$\mathbf{0.927 \pm 0.018}$
5	0.725 ± 0.029	$\mathbf{0.794 \pm 0.021}$	0.773 ± 0.019	0.781 ± 0.021	0.783 ± 0.029

Table 2. Results – *BalancedAccuracy*

ID	DT	RandomFS	randomforest	RFDT	RF sklearn
1	0.888 ± 0.029	0.936 ± 0.033	0.945 ± 0.022	$\mathbf{0.955 \pm 0.034}$	0.955 ± 0.019
2	0.284 ± 0.052	0.250 ± 0.019	0.244 ± 0.028	$\mathbf{0.291 \pm 0.032}$	0.287 ± 0.031
3	0.712 ± 0.038	0.731 ± 0.057	0.752 ± 0.034	0.781 ± 0.015	$\mathbf{0.786 \pm 0.030}$
4	0.851 ± 0.035	0.902 ± 0.023	0.909 ± 0.024	0.911 ± 0.024	$\mathbf{0.917 \pm 0.024}$
5	0.567 ± 0.040	0.595 ± 0.046	0.588 ± 0.053	$\mathbf{0.627 \pm 0.048}$	0.626 ± 0.058

Table 3. Results – *F1score*

ID	DT	RandomFS	randomforest	RFDT	RF sklearn
1	0.884 ± 0.028	0.933 ± 0.035	0.940 ± 0.024	0.953 ± 0.034	$\mathbf{0.955 \pm 0.017}$
2	0.479 ± 0.031	0.467 ± 0.026	0.462 ± 0.031	$\mathbf{0.515 \pm 0.029}$	0.513 ± 0.024
3	0.714 ± 0.038	0.739 ± 0.060	0.760 ± 0.035	0.787 ± 0.015	$\mathbf{0.792 \pm 0.030}$
4	0.873 ± 0.027	0.912 ± 0.017	0.919 ± 0.020	0.922 ± 0.019	$\mathbf{0.927 \pm 0.019}$
5	0.721 ± 0.026	0.764 ± 0.030	0.752 ± 0.028	0.770 ± 0.025	$\mathbf{0.770 \pm 0.033}$

Table 4. Results – *Gmean*

ID	DT	RandomFS	randomforest	RFDT	RF sklearn
1	0.911 ± 0.022	0.948 ± 0.028	0.955 ± 0.018	0.964 ± 0.027	$\textbf{0.965} \pm \textbf{0.014}$
2	0.608 ± 0.025	0.583 ± 0.025	0.589 ± 0.028	0.642 ± 0.023	$\textbf{0.644} \pm \textbf{0.020}$
3	0.712 ± 0.038	0.731 ± 0.057	0.751 ± 0.034	0.781 ± 0.015	$\textbf{0.786} \pm \textbf{0.030}$
4	0.851 ± 0.035	0.902 ± 0.023	0.909 ± 0.024	0.911 ± 0.024	$\textbf{0.917} \pm \textbf{0.024}$
5	0.543 ± 0.048	0.558 ± 0.062	0.555 ± 0.068	$\textbf{0.606} \pm \textbf{0.059}$	0.603 ± 0.073

Table 5. Results – *Precision*

ID	DT	RandomFS	randomforest	RFDT	RF sklearn
1	0.889 ± 0.027	0.934 ± 0.034	0.943 ± 0.023	0.954 ± 0.034	$\textbf{0.958} \pm \textbf{0.015}$
2	0.484 ± 0.032	0.465 ± 0.049	0.433 ± 0.047	$\textbf{0.490} \pm \textbf{0.032}$	0.488 ± 0.034
3	0.717 ± 0.036	0.766 ± 0.049	0.784 ± 0.024	0.797 ± 0.016	$\textbf{0.800} \pm \textbf{0.032}$
4	0.876 ± 0.026	0.913 ± 0.017	0.920 ± 0.020	0.922 ± 0.018	$\textbf{0.928} \pm \textbf{0.019}$
5	0.719 ± 0.027	0.761 ± 0.037	0.742 ± 0.034	0.765 ± 0.029	$\textbf{0.765} \pm \textbf{0.039}$

Table 6. Results – *Recall*

ID	DT	RandomFS	randomforest	RFDT	RF sklearn
1	0.885 ± 0.027	0.933 ± 0.035	0.940 ± 0.024	0.953 ± 0.034	$\textbf{0.955} \pm \textbf{0.017}$
2	0.480 ± 0.041	$\textbf{0.564} \pm \textbf{0.015}$	0.555 ± 0.024	0.554 ± 0.031	0.553 ± 0.021
3	0.714 ± 0.037	0.750 ± 0.052	0.769 ± 0.030	0.790 ± 0.015	$\textbf{0.795} \pm \textbf{0.030}$
4	0.875 ± 0.026	0.912 ± 0.017	0.920 ± 0.020	0.922 ± 0.018	$\textbf{0.927} \pm \textbf{0.018}$
5	0.725 ± 0.029	$\textbf{0.794} \pm \textbf{0.021}$	0.773 ± 0.019	0.781 ± 0.021	0.783 ± 0.029

Table 7. Results – *Specificity*

ID	DT	RandomFS	randomforest	RFDT	RF sklearn
1	0.937 ± 0.016	0.963 ± 0.020	0.969 ± 0.012	$\textbf{0.976} \pm \textbf{0.019}$	0.976 ± 0.011
2	$\textbf{0.772} \pm \textbf{0.025}$	0.603 ± 0.046	0.627 ± 0.045	0.746 ± 0.027	0.750 ± 0.024
3	0.710 ± 0.039	0.711 ± 0.063	0.734 ± 0.039	0.773 ± 0.020	$\textbf{0.777} \pm \textbf{0.031}$
4	0.827 ± 0.045	0.891 ± 0.030	0.898 ± 0.030	0.900 ± 0.030	$\textbf{0.907} \pm \textbf{0.030}$
5	0.409 ± 0.065	0.396 ± 0.081	0.403 ± 0.091	$\textbf{0.473} \pm \textbf{0.083}$	0.469 ± 0.098