

# Random Forests

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## 1 Introduction

**Table 1.** Results – *Accuracy*

ID	DT	RandomFS	randomforest	RFDT	RF sklearn
1	$0.885 \pm 0.027$	$0.926 \pm 0.025$	$0.944 \pm 0.020$	$0.953 \pm 0.025$	<b><math>0.966 \pm 0.022</math></b>
2	$0.480 \pm 0.041$	<b><math>0.566 \pm 0.025</math></b>	$0.559 \pm 0.012$	$0.554 \pm 0.027$	$0.556 \pm 0.022$
3	$0.714 \pm 0.037$	$0.746 \pm 0.037$	$0.749 \pm 0.043$	$0.793 \pm 0.035$	<b><math>0.796 \pm 0.027</math></b>
4	$0.875 \pm 0.026$	$0.904 \pm 0.020$	$0.911 \pm 0.026$	$0.922 \pm 0.018$	<b><math>0.927 \pm 0.022</math></b>
5	$0.725 \pm 0.029$	<b><math>0.789 \pm 0.023</math></b>	$0.774 \pm 0.025$	$0.788 \pm 0.039$	$0.789 \pm 0.027$

**Table 2.** Results – *BalancedAccuracy*

ID	DT	RandomFS	randomforest	RFDT	RF sklearn
1	$0.888 \pm 0.029$	$0.930 \pm 0.026$	$0.948 \pm 0.018$	$0.953 \pm 0.027$	<b><math>0.968 \pm 0.022</math></b>
2	$0.284 \pm 0.052$	$0.261 \pm 0.029$	$0.244 \pm 0.015$	<b><math>0.293 \pm 0.025</math></b>	$0.288 \pm 0.025$
3	$0.712 \pm 0.038$	$0.729 \pm 0.039$	$0.731 \pm 0.045$	$0.783 \pm 0.040$	<b><math>0.786 \pm 0.030</math></b>
4	$0.851 \pm 0.035$	$0.891 \pm 0.027$	$0.898 \pm 0.033$	$0.910 \pm 0.027$	<b><math>0.914 \pm 0.028</math></b>
5	$0.567 \pm 0.040$	$0.583 \pm 0.047$	$0.591 \pm 0.047$	<b><math>0.617 \pm 0.048</math></b>	$0.609 \pm 0.037$

**Table 3.** Results – *F1score*

ID	DT	RandomFS	randomforest	RFDT	RF sklearn
1	$0.884 \pm 0.028$	$0.925 \pm 0.025$	$0.943 \pm 0.020$	$0.953 \pm 0.025$	<b><math>0.966 \pm 0.023</math></b>
2	$0.479 \pm 0.031$	$0.473 \pm 0.033$	$0.460 \pm 0.020$	<b><math>0.515 \pm 0.023</math></b>	$0.509 \pm 0.020$
3	$0.714 \pm 0.038$	$0.737 \pm 0.040$	$0.740 \pm 0.046$	$0.790 \pm 0.037$	<b><math>0.792 \pm 0.029</math></b>
4	$0.873 \pm 0.027$	$0.904 \pm 0.021$	$0.910 \pm 0.027$	$0.921 \pm 0.019$	<b><math>0.926 \pm 0.023</math></b>
5	$0.721 \pm 0.026$	$0.757 \pm 0.033$	$0.755 \pm 0.029$	<b><math>0.772 \pm 0.037</math></b>	$0.769 \pm 0.026$

Table 4. Results – *Gmean*

ID	DT	RandomFS	randomforest	RFDT	RF sklearn
1	0.911 $\pm$ 0.022	0.944 $\pm$ 0.020	0.957 $\pm$ 0.015	0.964 $\pm$ 0.020	<b>0.974 <math>\pm</math> 0.017</b>
2	0.608 $\pm$ 0.025	0.591 $\pm$ 0.028	0.577 $\pm$ 0.016	<b>0.643 <math>\pm</math> 0.021</b>	0.637 $\pm$ 0.017
3	0.712 $\pm$ 0.038	0.729 $\pm$ 0.039	0.731 $\pm$ 0.045	0.783 $\pm$ 0.040	<b>0.786 <math>\pm</math> 0.030</b>
4	0.851 $\pm$ 0.035	0.891 $\pm$ 0.027	0.898 $\pm$ 0.034	0.910 $\pm$ 0.027	<b>0.914 <math>\pm</math> 0.028</b>
5	0.543 $\pm$ 0.048	0.542 $\pm$ 0.066	0.560 $\pm$ 0.058	<b>0.592 <math>\pm</math> 0.057</b>	0.580 $\pm$ 0.044

Table 5. Results – *Precision*

ID	DT	RandomFS	randomforest	RFDT	RF sklearn
1	0.889 $\pm$ 0.027	0.930 $\pm$ 0.024	0.946 $\pm$ 0.019	0.955 $\pm$ 0.024	<b>0.967 <math>\pm</math> 0.022</b>
2	0.484 $\pm$ 0.032	0.451 $\pm$ 0.057	0.441 $\pm$ 0.041	<b>0.492 <math>\pm</math> 0.027</b>	0.480 $\pm$ 0.023
3	0.717 $\pm$ 0.036	0.758 $\pm$ 0.041	0.764 $\pm$ 0.046	0.800 $\pm$ 0.034	<b>0.802 <math>\pm</math> 0.025</b>
4	0.876 $\pm$ 0.026	0.905 $\pm$ 0.020	0.911 $\pm$ 0.026	0.922 $\pm$ 0.018	<b>0.927 <math>\pm</math> 0.022</b>
5	0.719 $\pm$ 0.027	0.748 $\pm$ 0.047	0.746 $\pm$ 0.035	<b>0.770 <math>\pm</math> 0.048</b>	0.764 $\pm$ 0.030

Table 6. Results – *Recall*

ID	DT	RandomFS	randomforest	RFDT	RF sklearn
1	0.885 $\pm$ 0.027	0.926 $\pm$ 0.025	0.944 $\pm$ 0.020	0.953 $\pm$ 0.025	<b>0.966 <math>\pm</math> 0.022</b>
2	0.480 $\pm$ 0.041	<b>0.566 <math>\pm</math> 0.025</b>	0.559 $\pm$ 0.012	0.554 $\pm$ 0.027	0.556 $\pm$ 0.022
3	0.714 $\pm$ 0.037	0.746 $\pm$ 0.037	0.749 $\pm$ 0.043	0.793 $\pm$ 0.035	<b>0.796 <math>\pm</math> 0.027</b>
4	0.875 $\pm$ 0.026	0.904 $\pm$ 0.020	0.911 $\pm$ 0.026	0.922 $\pm$ 0.018	<b>0.927 <math>\pm</math> 0.022</b>
5	0.725 $\pm$ 0.029	<b>0.789 <math>\pm</math> 0.023</b>	0.774 $\pm$ 0.025	0.788 $\pm$ 0.039	0.789 $\pm$ 0.027

Table 7. Results – *Specificity*

ID	DT	RandomFS	randomforest	RFDT	RF sklearn
1	0.937 $\pm$ 0.016	0.962 $\pm$ 0.015	0.970 $\pm$ 0.010	0.975 $\pm$ 0.015	<b>0.982 <math>\pm</math> 0.012</b>
2	<b>0.772 <math>\pm</math> 0.025</b>	0.618 $\pm$ 0.037	0.595 $\pm$ 0.026	0.747 $\pm$ 0.024	0.731 $\pm$ 0.024
3	0.710 $\pm$ 0.039	0.712 $\pm$ 0.042	0.714 $\pm$ 0.048	0.772 $\pm$ 0.045	<b>0.777 <math>\pm</math> 0.034</b>
4	0.827 $\pm$ 0.045	0.879 $\pm$ 0.034	0.886 $\pm$ 0.042	0.898 $\pm$ 0.035	<b>0.902 <math>\pm</math> 0.035</b>
5	0.409 $\pm$ 0.065	0.377 $\pm$ 0.078	0.408 $\pm$ 0.074	<b>0.447 <math>\pm</math> 0.068</b>	0.428 $\pm$ 0.055