

Supplementary Material

Additional results are provided below for each of the application domains examined in the main paper:

- cancer classification from genomic data (Table S1 and Table S2)
- text categorization (Table S3 and Table S4)
- image classification (Table S5 and Table S6)

Table S1. *Uterus* and *Omentum* datasets: *F-measure* and *G-mean* performance of the *RF* classifier in conjunction with data balancing (*RUS/SMOTE*) and feature selection (1% of the original features, as selected by the *IG* ranker).

<i>Dataset</i>	<i>Performance measure</i>	<i>Baseline</i>	<i>FS alone</i>	<i>FS with RUS (3:1)</i>	<i>FS with RUS (2:1)</i>	<i>FS with RUS (1:1)</i>	<i>FS with SMOTE (3:1)</i>	<i>FS with SMOTE (2:1)</i>	<i>FS with SMOTE (1:1)</i>	
<i>Uterus</i>	<i>F-measure</i>	0.26	0.50	0.62	0.61	0.55	0.62	0.64	0.65	<i>FS before sampling</i>
				0.62	0.60	0.53	0.62	0.63	0.63	<i>Sampling before FS</i>
	<i>G-mean</i>	0.38	0.63	0.84	0.87	0.88	0.80	0.83	0.87	<i>FS before sampling</i>
				0.84	0.86	0.87	0.80	0.82	0.85	<i>Sampling before FS</i>
<i>Omentum</i>	<i>F-measure</i>	0.00	0.32	0.54	0.51	0.46	0.53	0.54	0.56	<i>FS before sampling</i>
				0.53	0.50	0.44	0.55	0.56	0.55	<i>Sampling before FS</i>
	<i>G-mean</i>	0.00	0.47	0.84	0.86	0.87	0.74	0.75	0.79	<i>FS before sampling</i>
				0.83	0.86	0.87	0.76	0.79	0.81	<i>Sampling before FS</i>

Table S2. *Uterus* and *Omentum* datasets: *F-measure* and *G-mean* performance of the *RF* classifier in conjunction with cost-sensitive methods (*MinCost/Weighting*) and feature selection (1% of the original features, as selected by the *IG* ranker).

<i>Dataset</i>	<i>Performance measure</i>	<i>Baseline</i>	<i>FS alone</i>	<i>FS with MinCost (2)</i>	<i>FS with MinCost (3)</i>	<i>FS with MinCost (4)</i>	<i>FS with Weighting (2)</i>	<i>FS with Weighting (3)</i>	<i>FS with Weighting (4)</i>
<i>Uterus</i>	<i>F-measure</i>	0.26	0.50	0.62	0.64	0.63	0.58	0.60	0.60
	<i>G-mean</i>	0.38	0.63	0.80	0.86	0.88	0.72	0.75	0.75
<i>Omentum</i>	<i>F-measure</i>	0.00	0.32	0.52	0.55	0.57	0.40	0.45	0.44
	<i>G-mean</i>	0.00	0.47	0.70	0.78	0.83	0.56	0.61	0.61

Table S3. Trade and Interest datasets: *F-measure* and *G-mean* performance of the RF classifier in conjunction with data balancing (RUS/SMOTE) and feature selection (5% of the original features, as selected by the IG ranker).

<i>Dataset</i>	<i>Performance measure</i>	<i>Baseline</i>	<i>FS alone</i>	<i>FS with RUS (3:1)</i>	<i>FS with RUS (2:1)</i>	<i>FS with RUS (1:1)</i>	<i>FS with SMOTE (3:1)</i>	<i>FS with SMOTE (2:1)</i>	<i>FS with SMOTE (1:1)</i>	
<i>Trade</i>	<i>F-measure</i>	0.31	0.63	0.69	0.62	0.48	0.68	0.67	0.66	<i>FS before sampling</i>
				0.68	0.60	0.46	0.61	0.63	0.63	<i>Sampling before FS</i>
	<i>G-mean</i>	0.43	0.69	0.93	0.94	0.94	0.74	0.74	0.73	<i>FS before sampling</i>
				0.93	0.95	0.94	0.68	0.69	0.69	<i>Sampling before FS</i>
<i>Interest</i>	<i>F-measure</i>	0.53	0.62	0.69	0.64	0.53	0.67	0.67	0.68	<i>FS before sampling</i>
				0.69	0.63	0.51	0.66	0.66	0.65	<i>Sampling before FS</i>
	<i>G-mean</i>	0.62	0.71	0.93	0.94	0.95	0.76	0.76	0.77	<i>FS before sampling</i>
				0.93	0.95	0.95	0.74	0.75	0.74	<i>Sampling before FS</i>

Table S4. Trade and Interest datasets: *F-measure* and *G-mean* performance of the RF classifier in conjunction with cost-sensitive methods (*MinCost/Weighting*) and feature selection (5% of the original features, as selected by the IG ranker).

<i>Dataset</i>	<i>Performance measure</i>	<i>Baseline</i>	<i>FS alone</i>	<i>FS with MinCost (2)</i>	<i>FS with MinCost (3)</i>	<i>FS with MinCost (4)</i>	<i>FS with Weighting (2)</i>	<i>FS with Weighting (3)</i>	<i>FS with Weighting (4)</i>
<i>Trade</i>	<i>F-measure</i>	0.31	0.63	0.75	0.75	0.72	0.70	0.69	0.71
	<i>G-mean</i>	0.43	0.69	0.84	0.90	0.92	0.76	0.76	0.77
<i>Interest</i>	<i>F-measure</i>	0.53	0.62	0.72	0.74	0.73	0.67	0.68	0.70
	<i>G-mean</i>	0.62	0.71	0.82	0.89	0.92	0.76	0.78	0.79

Table S5. Mountain and Urban datasets: *F-measure* and *G-mean* performance of the RF classifier in conjunction with data balancing (RUS/SMOTE) and feature selection (CFS filter).

<i>Dataset</i>	<i>Performance measure</i>	<i>Baseline</i>	<i>FS alone</i>	<i>FS with RUS (3:1)</i>	<i>FS with RUS (2:1)</i>	<i>FS with RUS (1:1)</i>	<i>FS with SMOTE (3:1)</i>	<i>FS with SMOTE (2:1)</i>	<i>FS with SMOTE (1:1)</i>	
<i>Mountain</i>	<i>F-measure</i>	0.51	0.55	0.59	0.63	0.61	0.57	0.62	0.64	<i>FS before sampling</i>
				0.58	0.63	0.60	0.57	0.61	0.64	<i>Sampling before FS</i>
	<i>G-mean</i>	0.60	0.64	0.68	0.75	0.78	0.66	0.72	0.78	<i>FS before sampling</i>
				0.67	0.75	0.77	0.66	0.72	0.77	<i>Sampling before FS</i>
<i>Urban</i>	<i>F-measure</i>	0.56	0.58	0.64	0.66	0.61	0.64	0.66	0.67	<i>FS before sampling</i>
				0.64	0.66	0.61	0.64	0.66	0.67	<i>Sampling before FS</i>
	<i>G-mean</i>	0.64	0.67	0.75	0.80	0.82	0.74	0.77	0.81	<i>FS before sampling</i>
				0.75	0.81	0.83	0.73	0.77	0.81	<i>Sampling before FS</i>

Table S6. Mountain and Urban datasets: *F-measure* and *G-mean* performance of the RF classifier in conjunction with cost-sensitive methods (*MinCost/Weighting*) and feature selection (CFS filter).

<i>Dataset</i>	<i>Performance measure</i>	<i>Baseline</i>	<i>FS alone</i>	<i>FS with MinCost (2)</i>	<i>FS with MinCost (3)</i>	<i>FS with MinCost (4)</i>	<i>FS with Weighting (2)</i>	<i>FS with Weighting (3)</i>	<i>FS with Weighting (4)</i>
<i>Mountain</i>	<i>F-measure</i>	0.51	0.55	0.64	0.61	0.57	0.62	0.63	0.64
	<i>G-mean</i>	0.60	0.64	0.78	0.79	0.76	0.72	0.75	0.77
<i>Urban</i>	<i>F-measure</i>	0.56	0.58	0.66	0.64	0.61	0.65	0.66	0.66
	<i>G-mean</i>	0.64	0.67	0.80	0.83	0.83	0.75	0.77	0.79