Table 1. Data sets

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Abbreviation | Number of Features | Number of Objects | Number of Classes | Difficulty |
| Spekboom | Spekboom | 46 | 57877 | 3 | 419.40 |
| Synthetic | Synthetic | 17 | 10000 | 2 | 294.12 |
| Statlog Landsat | Landsat | 36 | 3756 | 6 | 17.39 |
| Urban land cover | Urban | 147 | 261 | 9 | 0.20 |
| Botswana | Botswana | 145 | 1330 | 14 | 0.66 |
| Kennedy space centre | KSC | 176 | 1365 | 13 | 0.60 |

Table 2. Experiments carried out by combining methods and evaluation criteria

|  |  |  |
| --- | --- | --- |
| Method | Criterion | Abbreviation |
| Forward selection | Joint mutual information | FS-JMI |
| Forward selection | Maximum relevance minimum redundancy | FS-MRMR |
| Feature clustering and ranking | Naive Bayes | FCR-NaiveBC |
| Ranking | Naive Bayes | Rank-NaiveBC |
| Forward selection | Naive Bayes | FS-NaiveBC |
| Backward elimination | Naive Bayes | BE-NaiveBC |
| Feature clustering and ranking | Mutual information | FCR-MI |
| Ranking | Mutual information | Rank-MI |
| Forward selection | Mutual information | FS-MI |
| Backward elimination | Mutual information | BE-MI |

Table 3. Feature selection parameters

|  |  |  |
| --- | --- | --- |
| Data Set | Number of Features to Select |  |
| Spekboom | 6 |  |
| Synthetic | 5 |  |
| Statlog Landsat | 4 |  |
| Urban land cover | 4 |  |
| Botswana | 6 |  |
| Kennedy space centre | 7 |  |

Table 4. Method cumulative execution time over all data



|  |  |
| --- | --- |
| Method | Time (s) |
| FS-MRMR | 1.40 |
| Rank-MI | 2.11 |
| FS-JMI | 2.46 |
| FCR-MI | 3.01 |
| FS-MI | 12.08 |
| FCR-NaiveBC | 72.61 |
| Rank-NaiveBC | 73.05 |
| BE-MI | 242.39 |
| FS-NaiveBC | 429.76 |
| BE-NaiveBC | 3340.84 |

Table 5. Non-dominated ranking of methods by accuracy and stability



|  |  |
| --- | --- |
| Method | Rank |
| FCR-MI | 1 |
| FCR-NaiveBC | 1.67 |
| FS-MRMR | 2 |
| FS-JMI | 2.50 |
| FS-MI | 2.83 |
| FS-NaiveBC | 2.83 |
| Rank-MI | 3 |
| BE-NaiveBC | 3.33 |
| Rank-NaiveBC | 3.33 |
| BE-MI | 4 |