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CS1675

Assignment 10 Report

Due: 4/11/19

|  |  |
| --- | --- |
| Attribute | Score |
| 48 | 0.319181 |
| 25 | 0.214008 |
| 21 | 0.19097 |
| 70 | 0.189214 |
| 65 | 0.16932 |
| 40 | 0.167345 |
| 29 | 0.165045 |
| 19 | 0.140196 |
| 57 | 0.125454 |
| 20 | 0.121208 |
| 24 | 0.099525 |
| 30 | 0.095024 |
| 12 | 0.085818 |
| 47 | 0.084644 |
| 61 | 0.060677 |
| 10 | 0.057916 |
| 34 | 0.052678 |
| 27 | 0.046216 |
| 39 | 0.046114 |
| 41 | 0.042185 |

1a)

1b)

|  |  |
| --- | --- |
| Attribute | Score |
| 25 | 0.733986 |
| 29 | 0.683691 |
| 11 | 0.669465 |
| 47 | 0.666084 |
| 19 | 0.631452 |
| 34 | 0.617382 |
| 32 | 0.602107 |
| 30 | 0.602068 |
| 9 | 0.599969 |
| 56 | 0.597054 |
| 27 | 0.595305 |
| 60 | 0.592856 |
| 51 | 0.588075 |
| 26 | 0.587376 |
| 53 | 0.584499 |
| 7 | 0.57968 |
| 10 | 0.570896 |
| 61 | 0.568563 |
| 43 | 0.55667 |
| 44 | 0.542172 |

The lists are not the same but do share a couple of attributes in the top 20, most notably attribute 25 which is second when using Fisher score and first when using AUROC score. In general, the lists should be similar since both scores are measuring the same thing: how distinguishable the 2 classes are. However, they are calculated differently so we don’t expect the lists to be exactly the same.

|  |  |  |
| --- | --- | --- |
| T | Training Error | Testing Error |
| 1(base) | 0.107307692 | 0.192857143 |
| 2 | 0.091538462 | 0.144285714 |
| 3 | 0.063846154 | 0.152857143 |
| 4 | 0.056538462 | 0.139285714 |
| 5 | 0.035384615 | 0.150714286 |
| 6 | 0.032692308 | 0.140714286 |
| 7 | 0.018076923 | 0.15 |
| 8 | 0.024230769 | 0.135714286 |
| 9 | 0.018461538 | 0.148571429 |
| 10 | 0.020769231 | 0.138571429 |

2a)



As the number of models increases, the average classification error decreases in the training set. After the base model (T=1) the testing error does not seem to decrease at the same rate as the training error or at all on average.

|  |  |  |
| --- | --- | --- |
| T | Training Error | Testing Error |
| 1(base) | 0.166153846 | 0.283571429 |
| 2 | 0.144230769 | 0.162142857 |
| 3 | 0.1 | 0.220714286 |
| 4 | 0.098076923 | 0.165714286 |
| 5 | 0.059230769 | 0.167857143 |
| 6 | 0.078461538 | 0.153571429 |
| 7 | 0.050769231 | 0.161428571 |
| 8 | 0.061153846 | 0.137142857 |
| 9 | 0.041538462 | 0.142142857 |
| 10 | 0.053846154 | 0.129285714 |

2b)



Similar to the Support Vector Machine model, as more models are added bagging decreases the classification error when using the Decision Tree model. The testing error continuous to decrease as T increases unlike the SVM model which plateaued after the base model.