

Classification rules and descriptive induction

8/1/2013

Voting dataset

Voting dataset

- 435 instances
- 16 attributes
 - 16 nominal attributes
 - 0 numeric attributes
- No target variable
- No missing values

Classification rules: Weka → classifiers → rules → JRip

Baseline classifier: Weka → classifiers → rules → ZeroR

Association rules Weka → associations → Apriori

Size of set of large itemsets L[4]: 1

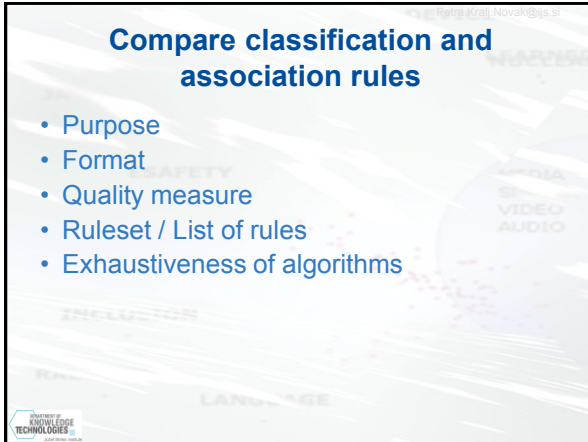
Best rules found:

1. adoption-of-the-budget-resolutions physician-fee-freesen 219 => party-democrat 219 conf: 1
2. adoption-of-the-budget-resolutions physician-fee-freesen aid-to-micraguan-contra 198 => party-democrat 219 conf: (1)
3. physician-fee-freesen aid-to-micraguan-contra 211 => party-democrat 201 conf: (1)
4. physician-fee-freesen education-spendin 202 => party-democrat 201 conf: (1)
5. physician-fee-freesen 247 => party-democrat 245 conf: (0.99)
6. ei-salvador-aid 208 => aid-to-micraguan-contra-y 197 conf: (0.99)
7. ei-salvador-aid 208 => aid-to-micraguan-contra-y 204 conf: (0.98)
8. adoption-of-the-budget-resolutions aid-to-micraguan-contra-y party-democrat 203 => physi 197 conf: (0.97)
9. ei-salvador-aid aid-to-micraguan-contra-y 204 => party-democrat 197 conf: (0.97)
10. aid-to-micraguan-contra-y party-democrat 218 => physician-fee-freesen 210 conf: (0.96)

Quality of association rules

Compare classification and association rules

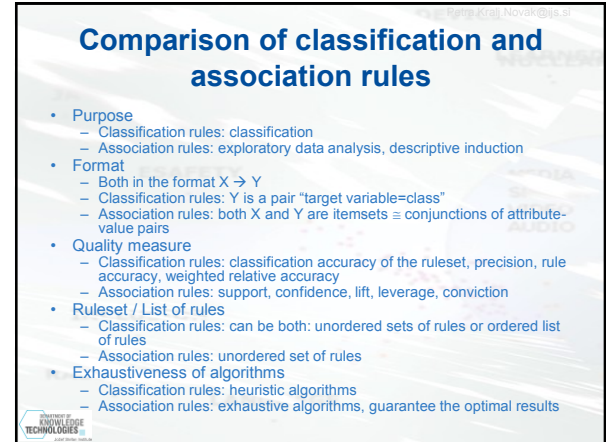
- Purpose
- Format
- Quality measure
- Ruleset / List of rules
- Exhaustiveness of algorithms



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Comparison of classification and association rules

- Purpose
 - Classification rules: classification
 - Association rules: exploratory data analysis, descriptive induction
- Format
 - Both in the format $X \rightarrow Y$
 - Classification rules: Y is a pair "target variable=class"
 - Association rules: both X and Y are itemsets = conjunctions of attribute-value pairs
- Quality measure
 - Classification rules: classification accuracy of the ruleset, precision, rule accuracy, weighted relative accuracy
 - Association rules: support, confidence, lift, leverage, conviction
- Ruleset / List of rules
 - Classification rules: can be both: unordered sets of rules or ordered list of rules
 - Association rules: unordered set of rules
- Exhaustiveness of algorithms
 - Classification rules: heuristic algorithms
 - Association rules: exhaustive algorithms, guarantee the optimal results



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