TRUMIT: A Tool to Support Large-Scale Mining of Text Association Rules

Robert Neumayer
e-mail: neumayer@idi.ntnu.no

NTNU
Norwegian University of Science and Technology

George Tsatsaronis
Web: http://www.idi.ntnu.no/~gbt/
e-mail: george.tsatsaronis@biotec.tu-dresden.de

biotec
Biotechnology Center TU Dresden

TECHNISCHE UNIVERSITÄT DRESDEN

TRANSINSIGHT

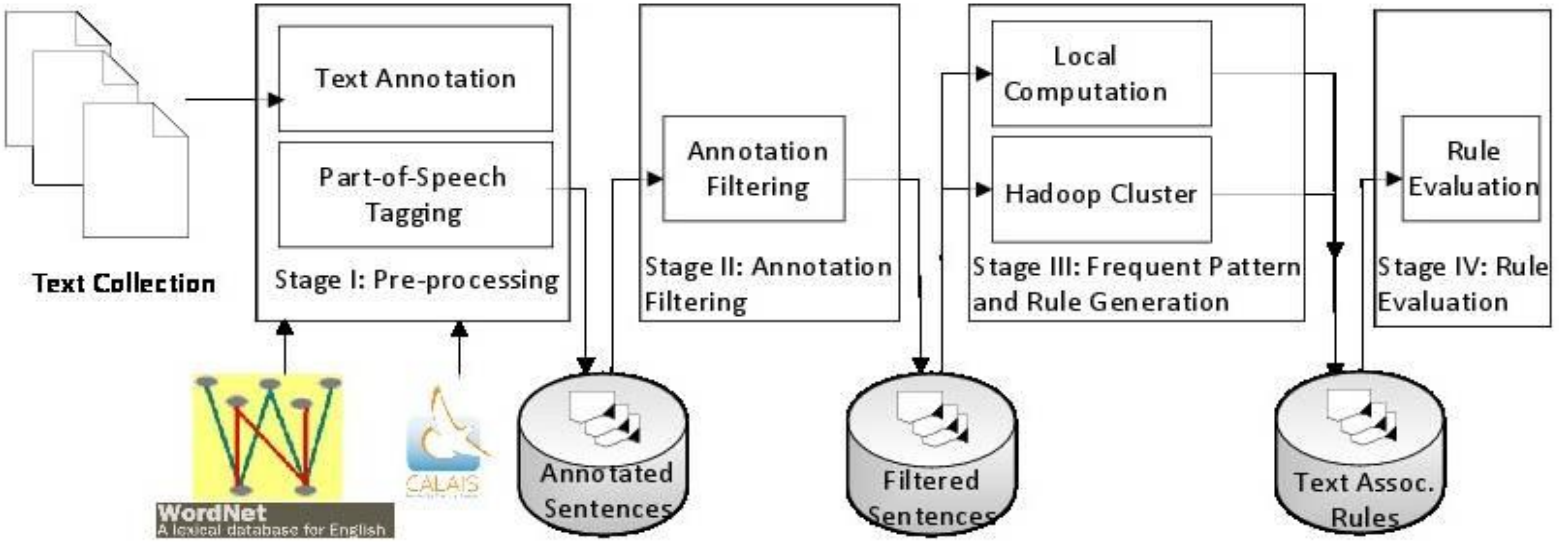
Kjetil Nørvåg
e-mail: noervaag@idi.ntnu.no

NTNU
Norwegian University of Science and Technology

System Description

- Efficient mining of association rules from text
- Term annotation using several difference annotators
- Association rule extraction between terms or categories of terms
- Novel unsupervised evaluation measures for weighting and ranking the importance of text rules
- Demonstration in two large text collections: ***Wikileaks*** and ***TREC-7***

Architecture



Methodology

- D = $\{d_1, d_2, \ldots, d_n\}$ the set of transactions, where D the set of all text sentences
- A = $\{a_1, a_2, \ldots, a_m\}$ the set of all annotations produced from applying all annotators of TRUMIT. Examples are: *Person, Company, Date, etc.*
- Examples of term rules: *Google => 1998, or Bill Gates => Microsoft*
- Examples of category rules: *Company => Date, Person => Company*
- Efficient implementation using: *fp-growth* on *Apache Mahout*

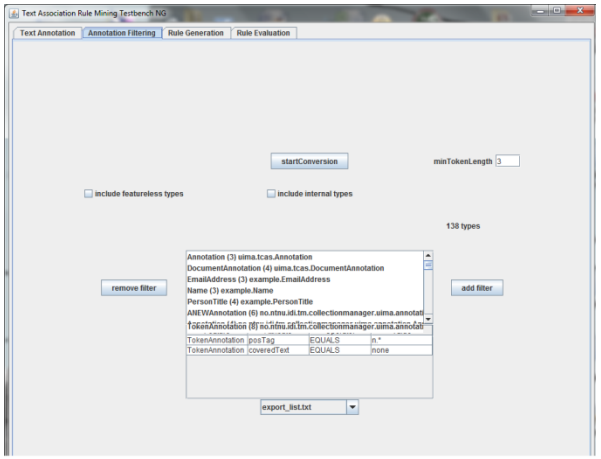
Annotators

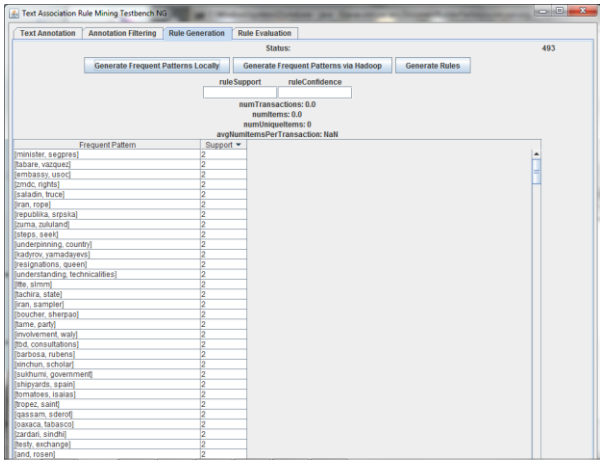
- Annotators' plugins through *Apache UIMA*

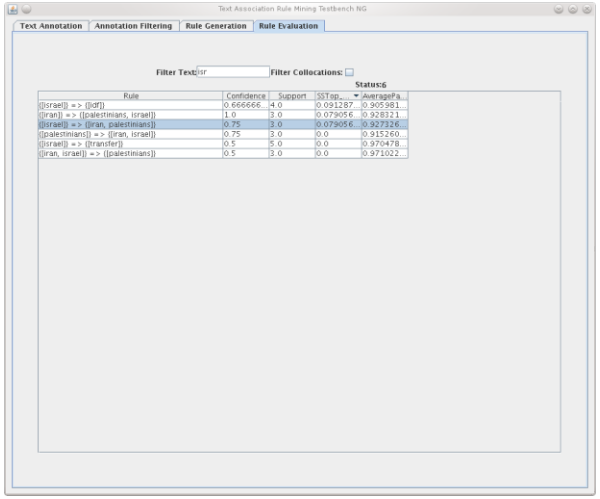
- Currently eight annotators are used:
  - Language annotator
  - Open Calais annotator
  - POS annotator
  - Stanford NER annotator
  - WordNet domain annotator
  - Maui keyword annotator
  - Lexical emotion annotator
  - Wikipedia miner annotator

- Any other annotator can be incorporated very easily

Demo


Text Association Rule Mining Testbench NG
Text Annotation
Annotation Filtering
Rule Generation
Rule Evaluation
startConversion
minTokenLength
include featureless types
include internal types
138 types
remove filter
add filter
export_list.txt


Text Association Rule Mining Testbench NG
Text Annotation
Annotation Filtering
Rule Generation
Rule Evaluation
Status:
493
Generate Frequent Patterns Locally
Generate Frequent Patterns via Hadoop
Generate Rules
ruleSupport
ruleConfidence
numTransactions: 0.0
numItems: 0.0
numUniqueItems: 0
avgNumItemsPerTransaction: NaN
Frequent Pattern
Support


Text Association Rule Mining Testbench NG
Text Annotation
Annotation Filtering
Rule Generation
Rule Evaluation
Filter Text
Filter Collocations:
Status:6
Rule
Confidence
Support