Analyzing Political Sentiment on Twitter

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Overview

- Problem: Opinion summarization at aspect level
- Corpus: Twitter stream in context of the 2012 Republican presidential primaries
- Approach:
    i.   Extract Noun Phrases and frequency
    ii.   Augment frequency with Pointwise Mutual Information (PMI)
    iii. Evaluate opinion words associated to aspects
    iv.   Present an aggregated opinion summary per candidate
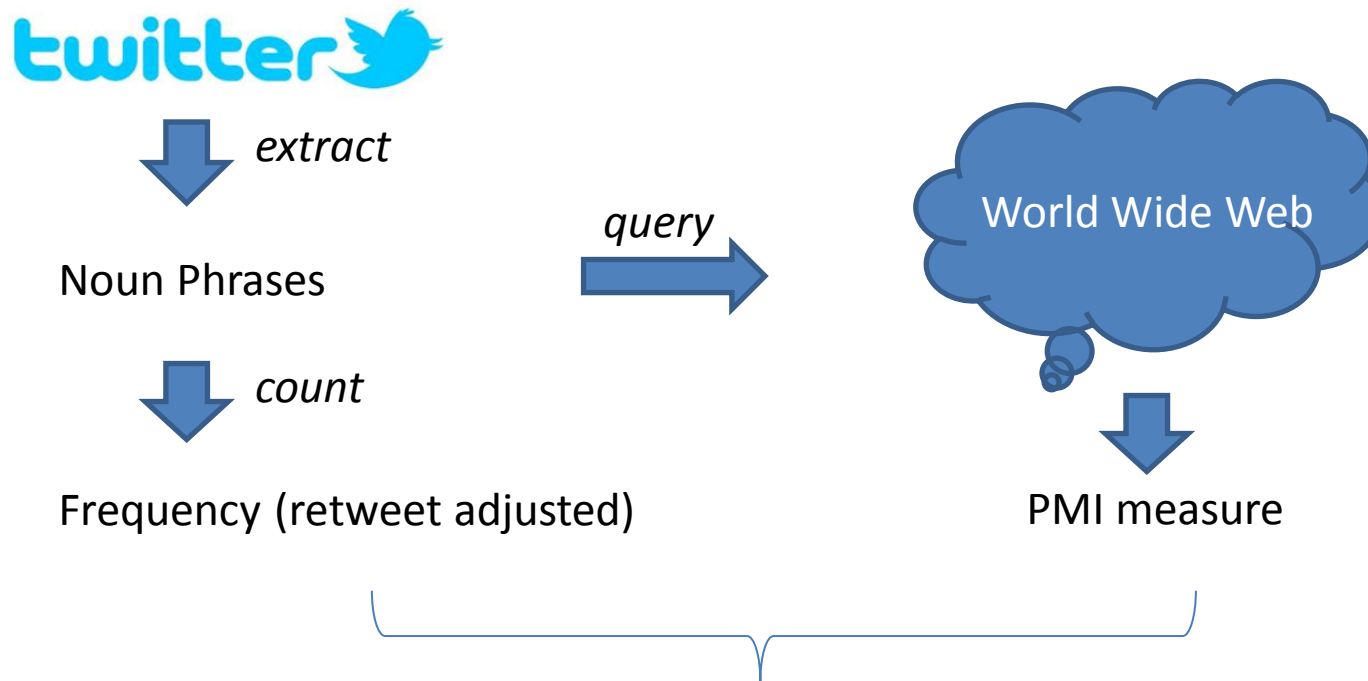   v.   Performance of analized PMI-measure

Difficulties

- Example:

"@GlobeGlen's analysis: Jon Huntsman excels in foreign policy debate http://..."

- Politically relevant aspects can be generic concepts or individual sets of topics

- What are characteristics of relevant aspects?

- How to evaluate asscociated opinions?

Hypothesis

- Relationship characteristic:
- Politicians and their campaign topics form a meronomy
  - Collect information about this relationship by querying the web
 - Avoid the use of syntactic pattern analysis

Aspect Extraction

twitter

↓ *extract*

Noun Phrases

↓ *count*

Frequency (retweet adjusted)

query →

World Wide Web

↓

PMI measure

Candidate Aspect	Score
Foreign policy debate	1.27
…	

Aspect-level Sentiment

- **Word-level:**
  - Lexicon-based classification at word level (expanded general opinion lexicon)
  - Determine the most probable class (positive, negative, neutral) of each opinion word according to synsets in WordNet

- **Aspect-level:**
  - Account for word distance to target aspect and valence shifters

Results

Opinion Summary - Rick Santorum
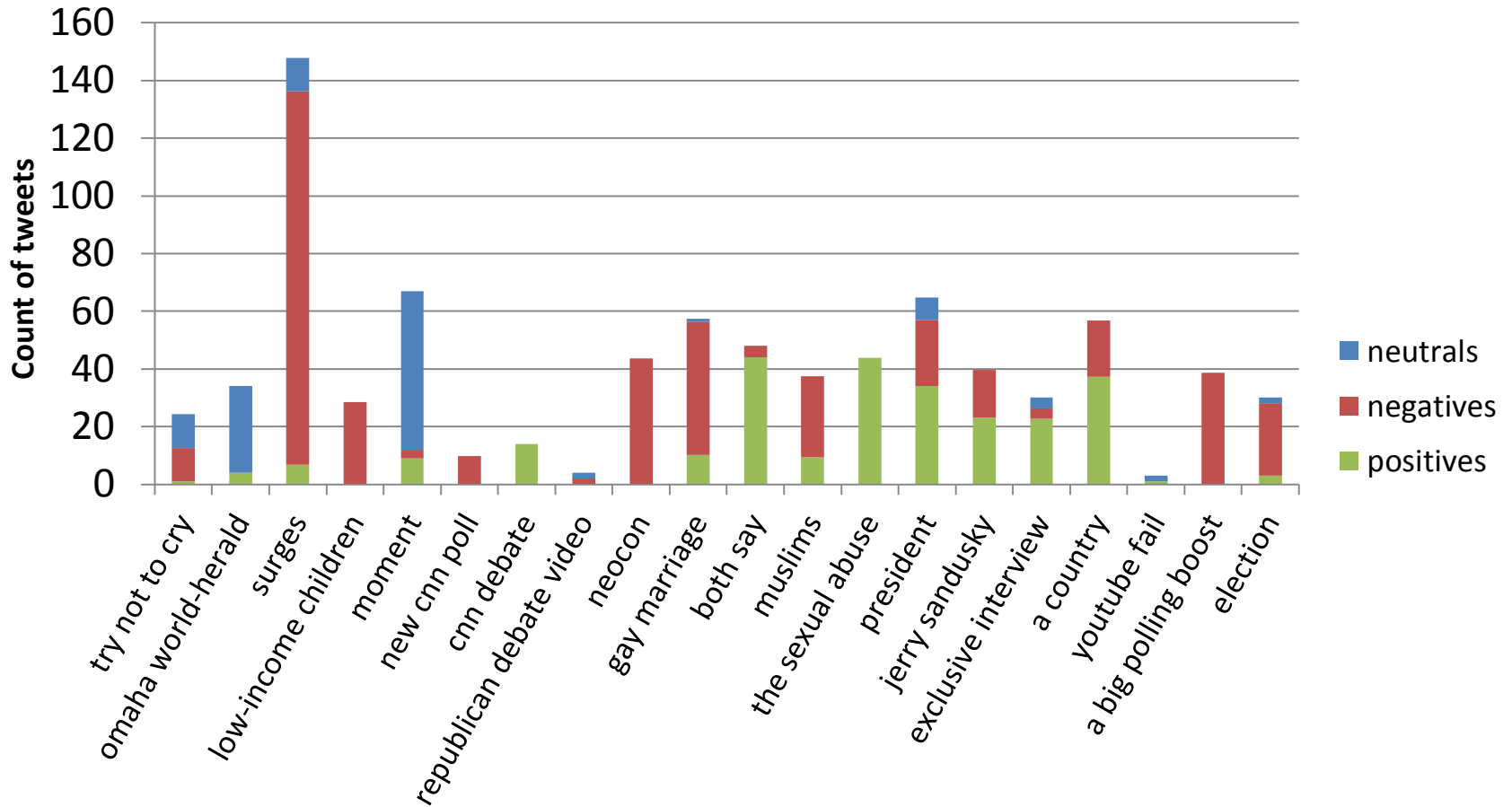
Evaluation

Threshold	Average accuracy	
	Adjusted PMI measure	Frequency score
20	**22,5%**	17,5%
40	20,25%	16,25%
60	17,50%	18,34%
80	16,75%	**20,00%**
100	16,00%	19,50%

- PMI-adjustment:
  - Adds valuable information to aspect extraction
  - Implies a meronomy between politicians and their campaign topics

Conclusions

- Evaluation:
  - Meronomy between politicians and their campaign topic holds
- Applications:
  - Social Media Monitoring of informal political discourse
- Future work:
  - Opinion target verification
  - Development of domain-specific lexicon

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