
Other Tasks related to Sentiment Analysis

Other Tasks: Subjectivity Detection

- For many applications, first decide if the document contains subjective information or which parts are subjective
 - Focus of TREC 2006 Blog track
 - Label sentences or documents as to whether they are objective or subjective

Computational work on other affective states

- **Emotion:**
 - Detecting annoyed callers to dialogue system
 - Detecting confused/frustrated versus confident students
- **Mood:**
 - Finding traumatized or depressed writers
- **Interpersonal stances:**
 - Detection of flirtation or friendliness in conversations
- **Personality traits:**
 - Detection of extroverts
- **Certainty:**
 - How certain the holder is of the opinion or sentiment

Detection of Friendliness

Ranganath, Jurafsky, McFarland

- Friendly speakers use collaborative conversational style
 - Laughter
 - Less use of negative emotional words
 - More sympathy
 - That's too bad I'm sorry to hear that
 - More agreement
 - I think so too
 - Less hedges
 - kind of sort of a little ...

Viewpoints and Perspectives

- In some types of documents, the authors are not necessarily discussing opinions on particular topics, but are revealing general attitudes or sometimes a set of bundled attitudes and beliefs
 - Classifying political blogs as liberal, conservative, libertarian, etc.
 - Identifying Israeli vs. Palestinian viewpoints
- One type of this is Multi-perspective Question Answering
 - On next slide . . .

MPQA

- Multi-Perspective Question Answering
 - *What does Bush think about Hillary Clinton?*
 - *How does the US regard the latest terrorist attacks in Baghdad?*
- Sentence, or part of a sentence, that answers the question:
 - *“How does X feel about Y?”*
 - *“It makes the system more flexible,” argues a Japanese businessman.*
- Looking for opinion linked to opinion-holder

Stoyanov, Cardie, Wiebe, & Litman,

Evaluating an Opinion Annotation Scheme Using a Multi-Perspective Question and Answer Corpus. 2004 AAAI Spring Symposium on Exploring Attitude and Affect in Text,

Stance and Argumentation

- Some forms of online discourse takes the form of trying to argue a viewpoint or opinion, or taking a stance in a particular debate
 - Ideological Debates
 - Somasundaram and Wiebe – look at argumentation
 - Abbot, Walker, et al – classifying stance in on-line debates
 - “Cats rule, dogs drool!” is much easier to classify than debates on abortion, religion, politics

Certainty Recognition

- *Certainty*
 - the quality / state of being free from doubt, especially on the basis of evidence
- Related work:
 - Types of subjectivity (Liddy et al. 1993; Wiebe 1994, 2000; Wiebe et al. 2001)
 - Adverbs and modality (Hoye, 1997)
 - Hedging in different kinds of discourse
 - Expressions of (un)certainty in English (from applied linguistics)
- Goal – characterize ‘certainty’ of textual statements

Twitter Sentiment Detection

- Twitter sentiment detection task is usually to label the entire tweet as positive, negative or neutral in overall sentiment
- Many efforts in this area, notably
 - NRC-Canada-2014: Recent Improvements in Sentiment Analysis of Tweets, Xiaodan Zhu, Svetlana Kiritchenko, and Saif M. Mohammad, In Proceedings of the eighth international workshop on Semantic Evaluation Exercises (SemEval-2014), August 2014, Dublin, Ireland.”
 - Released description of features.
 - Released resources created (**tweet-specific sentiment lexicons**).
 - www.purl.com/net/sentimentoftweets (2013 paper) and <http://www.saifmohammad.com/WebDocs/SemEval2014-Task9.pdf> (2014 paper)

Sentiment Analysis Features

Features	Examples
sentiment lexicons	#positive: 3, scorePositive: 2.2; maxPositive: 1.3; last: 0.6, scoreNegative: 0.8, scorePositive_neg: 0.4
word n-grams	spectacular, like documentary
char n-grams	spect, docu, visua
part of speech	#N: 5, #V: 2, #A:1
Negation	#Neg: 1; ngram:perfect → ngram:perfect_neg, polarity:positive → polarity:positive_neg
word clusters	probably, definitely, def
all-caps	YES, COOL
Punctuation	#!+: 1, #?+: 0, #!?: 0
Emoticons	:D, >:(
elongated words	soooo, yaayyy

Summary on Sentiment

- Understanding semantics of less factual aspects of text
- Generally modeled as classification or regression task
 - predict a binary label for polarity
 - or predict an ordinal label for the level of sentiment
- Features:
 - Negation is important
 - Using all (filtered) words works well for some tasks
 - Finding subsets of words may help in other tasks
 - Hand-built polarity lexicons
 - Use seeds and semi-supervised learning to induce lexicons