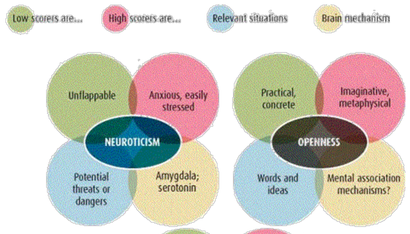
Using Nuances of Emotion to Identify Personality

Saif Mohammad and Svetlana Kiritchenko
National Research Council Canada

In Proceedings of the ICWSM Workshop on Computational Personality Recognition, July 2013, Boston, USA.

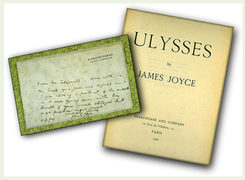


Source: http://blog.lib.umn.edu/reife014/myblog2/2012/04/the-big-5.html

Task: Detecting Personality from Text

Can a system automatically detect personality traits from:

- Stream of consciousness essays
- Facebook posts
- Twitter messages
- Blog or forum posts



The Big 5 Personality Traits or Dimensions of Personality

extroversion vs. introversion: sociable, assertive vs. aloof, shy
openness to experience vs. conventionality: intellectual, insightful vs. shallow, unimaginative
conscientiousness vs. spontaneous: self-disciplined, organized vs. inefficient, careless
emotional stability vs. neuroticism: calm, unemotional vs. insecure, anxious
agreeability vs. disagreeability: friendly, co-operative vs. antagonistic, fault-finding

System: Supervised Machine Learning SVM Classifier

Features Used

Mairesse Baseline: words per sentence, long words, type/token ratio, negations, assents, articles, prepositions, numbers, pronouns, emotion words, cognition words, sensory and perceptual words, social processes words, time words, space words.

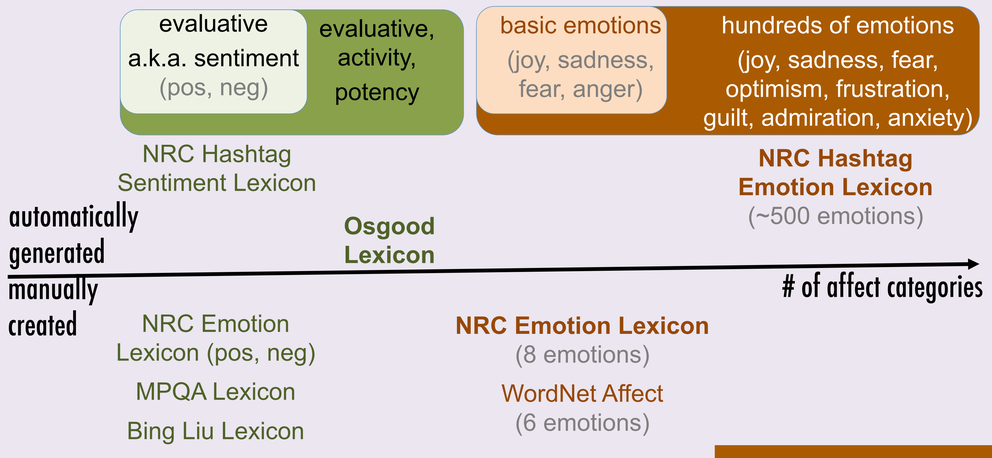
Unigrams: words

Specificity: Info. content of words in WordNet.

Coarse Affect:
- **Osgood Lexicon** (evaluative, activity, potency)
- NRC Emotion Lexicon (8 basic emotions)

Fine Affect:
- **NRC Hashtag Emotion Lexicon** (500 emotions)

Affect Lexicons: Lists of word-sentiment pairs, with scores of association.



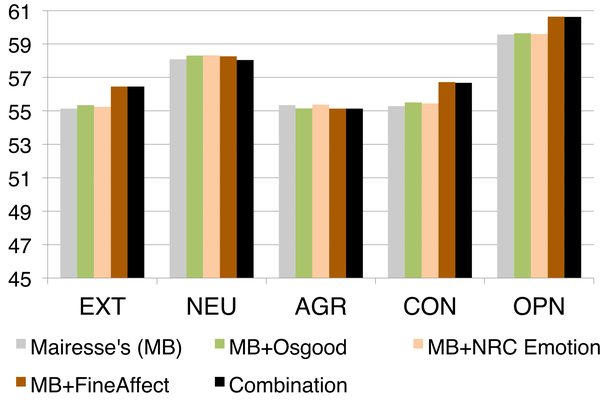
Automatically Generated Emotion Lexicon

- Hashtagged emotion words are good labels of emotions in tweets (Mohammad, 2012)
  That jerk stole my photo on Tumblr #grrrr #anger
- Polled the Twitter API for tweets with hashtags
  - About 500 emotion words
  - A set of about 3 million tweets was compiled
- For every term t a score is generated:
  $score(t) = PMI(t, emotion)$
  - If $score(t) > 0$, then w is associated with $emotion$

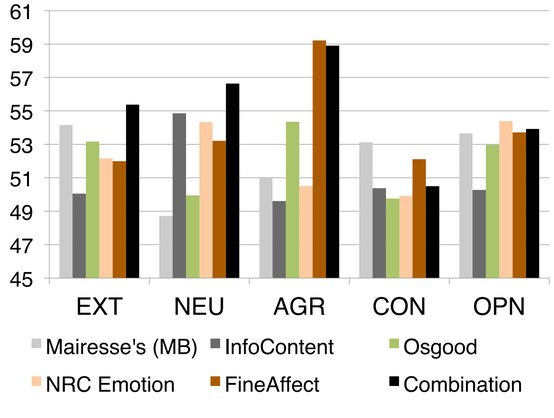
NRC Hashtag Emotion Lexicon: 15,825 entries

Results and Analysis

Accuracy on Essays dataset



Accuracy on Facebook dataset



The two most discriminative emotion categories for extraversion—introversion:
- #possessive: possessive 7.2, hottie 6.5, tense 5.9, lover 5.2, mine 4.1,…
- #apart: apart 4.6, tear 4.1, miss 2.3, fall 2.1, heart 1.6,…

Top Emotion Hashtags on Essays dataset

EXT	NEU	AGR	CON	OPN
#possessive	#guilt	#happy	#excited	#anxious
#apart	#eager	#anger	#apprehensive	#delighted
#happy	#interested	#homesick	#anger	#blah
#cherish	#keen	#giddy	#hate	#exhausted
#admiring	#helpless	#chaotic	#ashamed	#sweet
#impaired	#passion	#heartbroken	#giddy	#tired
#jealousy	#unhappy	#sweet	#partial	#lonely
#gleeful	#insignificant	#neglected	#disturbed	#nervous
#vibrant	#timid	#loving	#wrecked	#ecstatic
#huggy	#anticipation	#lonely	#needed	#wrecked

Conclusions

- Fine emotion categories consistently help detect personality in both essays and Facebook datasets
  - Information content and coarse affect categories do not lead to consistent gains
  - Clustering of fine emotion categories is not effective
- Generated emotion lexicon from tweets using hashtags
  - First lexicon for hundreds of emotions