Detection, modelling and visualisation of space-related emotions from user-generated content

Eva Hauthal
Lisbon - 9th June 2015
Motivation

- event detection
- opinion mining
- urban planning
- social sciences
- social geography
- tourism
Emotions

Overall emotional reaction

- physiological reactions
- tonic posture reactions
- instrumental motoric reactions
- expressive motoric reactions
- expressive linguistic reactions
- subjective experience components
Detection, modelling and visualisation of space-related emotions from user-generated content
Emotions

Emotions in Language (Affective Connotation)

"the aura of feelings, pleasant or unpleasant, that surrounds practically all words"

Hayakawa (1952: 83)
Language in Thought and Action.
Emotions

Structuring Emotions

Valence

Arousal

positive

unarousing

negative

Russell (1980)
A circumplex model of affect.
ANEW & BAWL-R

Affective Norms for English Words

Berlin Affective Word List - Reloaded

Detection, modelling and visualisation of space-related emotions from user-generated content
Detection, modelling and visualisation of space-related emotions from user-generated content
### Grammatical Special Cases

**happy**

<table>
<thead>
<tr>
<th>Maximum</th>
<th>Amplification</th>
<th>Attenuation</th>
<th>Minimum</th>
<th>Negation</th>
<th>Amplified Negation</th>
</tr>
</thead>
<tbody>
<tr>
<td>absolutely happy</td>
<td>very happy</td>
<td>a bit happy</td>
<td>hardly happy</td>
<td>not happy</td>
<td>not happy at all</td>
</tr>
<tr>
<td>Superlative</td>
<td>Comparative</td>
<td></td>
<td></td>
<td>Prefixes</td>
<td></td>
</tr>
<tr>
<td>happiest</td>
<td>happier</td>
<td></td>
<td></td>
<td>unhappy</td>
<td></td>
</tr>
</tbody>
</table>

Based on:
- Biedermann (1969)
- Quirk et al. (1985)
- van Os (1989)
  Aspekte der Intensivierung im Deutschen. Narr, Tübingen.
## Grammatical Special Cases

<table>
<thead>
<tr>
<th>Maximum</th>
<th>Amplification</th>
<th>Modifying the intensity of...</th>
<th>Negation</th>
<th>Amplified Negation</th>
</tr>
</thead>
<tbody>
<tr>
<td>absolutely</td>
<td>deeply</td>
<td>a bit</td>
<td>neither</td>
<td>absolutely not</td>
</tr>
<tr>
<td>completely</td>
<td>enormously</td>
<td>a little</td>
<td>never</td>
<td>not at all</td>
</tr>
<tr>
<td>entirely</td>
<td>highly</td>
<td>fairly</td>
<td>no</td>
<td>not by any means</td>
</tr>
<tr>
<td>extremely</td>
<td>pretty</td>
<td>hardly</td>
<td>nobody</td>
<td>not in any respect</td>
</tr>
<tr>
<td>fully</td>
<td>really</td>
<td>in the slightest</td>
<td>none</td>
<td>no way</td>
</tr>
<tr>
<td>too much</td>
<td>so</td>
<td>scarcely</td>
<td>nor</td>
<td>really not</td>
</tr>
<tr>
<td>totally</td>
<td>strongly</td>
<td>not really</td>
<td>not</td>
<td>...</td>
</tr>
<tr>
<td>utterly</td>
<td>truly</td>
<td>slightly</td>
<td>not</td>
<td>...</td>
</tr>
<tr>
<td>...</td>
<td>very</td>
<td>somewhat</td>
<td>nothing</td>
<td>...</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>without</td>
<td>...</td>
</tr>
</tbody>
</table>

### degree words

#### Adjectives
- They love their dog **very dearly**.

#### Adverbs
- He **denied** it **strongly**.

#### Verbs
- It was **absolutely good**.

#### Nouns
- It was **really an adventure**.
Detection, modelling and visualisation of space-related emotions from user-generated content.
Detection, modelling and visualisation of space-related emotions from user-generated content
Considerations

1 place ≠ 1 emotion

→ personal preferences/experiences/memories
→ individual vs. collective emotions
→ temporal aspects
Valence & Arousal

- Positive Valence & high Arousal
- Positive Valence & low Arousal
- Negative Valence & high Arousal
- Negative Valence & low Arousal

Detection, modelling and visualisation of space-related emotions from user-generated content
Valence

Lisbon - 2015/06/09

Detection, modelling and visualisation of space-related emotions from user-generated content

CC BY-NC by lyricsart
http://www.flickr.com/photos/91821458@N00/76083614/

cc  BY-SA by MalteF
http://de.wikipedia.org/wiki/Dresden

19,766 – 117,288
3,628 – 19,765
957 – 3,627
515 – 956

CC  BY-NC by lyricsart
http://www.flickr.com/photos/91821458@N00/76083614/

attack compel court damage difficult fire
government grab grenze krieg ruin sarg schaden
tod tot verkehr war weltkrieg work zeugnis

http://de.wikipedia.org/wiki/Dresden
Detection, modelling and visualisation of space-related emotions from user-generated content.
Detection, modelling and visualisation of space-related emotions from user-generated content.

http://www.flickr.com/photos/18seconds/2949364022/
Detection, modelling and visualisation of space-related emotions from user-generated content.
Emotional Analysis of Dresden without Consideration of Grammatical Special Cases

![Emotional Analysis of Dresden](chart.png)

Detection, modelling and visualisation of space-related emotions from user-generated content
Detection, modelling and visualisation of space-related emotions from user-generated content
Detection, modelling and visualisation of space-related emotions from user-generated content
Problems and Weaknesses

- language processing
- degree words
- irony
- reference of photo description
- incorrect photo metadata
- validation of emotions
Thank you for your attention!

eva.hauthal@tu-dresden.de