

NTCIR-13 Pilot Task: Emotion Cause Analysis (ECA)

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Motivation

- There has been a large body of research work on sentiment/emotion analysis from text
- Several bake-offs/shared tasks were organized to evaluate the sentiment/emotion analysis techniques
 - Multilingual Opinion Analysis Task (NTCIR 6, 7, 8 2007-2009)
<http://blueberry.slis.tsukuba.ac.jp/moat/index.php/MOAT>
 - Emotion Analysis in Chinese Weibo (NLPCC 2013,2014)
http://tcci.ccf.org.cn/conference/2014/pages/page04_eva.html
 - Sentiment Analysis in Twitter (Semeval 2013,2015)
<http://alt.qcri.org/semeval2015/task10/>

Motivation

- **Most Existing Task: Emotion Analysis**
 - Classify the text to pre-defined emotion categories
 - Extract Holder/Target of emotion
 - To know the emotion expressed in the text
- **Challenge Task: Emotion Cause Analysis (ECA)**
 - Extract the expression of stimuli or cause of emotion from text
 - To know what cause the emotion
 - Essential to emotion understanding
 - No existing public-available dataset with emotion cause annotation

Definitions

- Emotion: An affective state of consciousness experienced, as distinguished from cognitive and volitional states of consciousness
- Emotion Categories: Following Ekman Six categories
 - Happiness, Sadness, Anger, Disgust, Fear, Surprise

Definitions

- **Emotion Cause**
 - The text expression corresponding to the things or events which stimulates the generation or transformation of human emotions
- **Direct Cause**
 - The cause expression in the text which directly stimulates the human emotions
- **Elaborated Cause**
 - The elaborated text expression of emotion cause

Example

ISIS blow up pagan temple in Palmyra that has stood for 2,000 years. The world community is infuriated by this destruction.

Emotion category

Anger

Direct cause

“this destruction”

Elaborated cause

“ISIS blow up
pagan temple
in Palmyra that
has stood for
2,000 years”

Example

“了解到他生命中最后10分钟发生的一切，很多人留下了悲伤的眼泪”

(Known the things happened in the last 10 minutes of his life, a lot of people left the sad tears)

Emotion category

Sad

Direct cause

了解到他生命中最后10分钟发生的一切

(Known the things happened in the last 10 minutes of his life)

Task Design

- Subtask 1: Emotion Cause Detection at the Clause level
 - To evaluate the techniques for detecting the clause which contains emotion cause
 - A clause-level binary text classification problem
 - Evaluation Metrics: classification-based

$$Precision_{clause} = \frac{\#correct\ cause\ relevant\ clauses}{\#detected\ cause\ relevant\ clauses}$$

$$Recall_{clause} = \frac{\#correct\ cause\ relevant\ clauses}{\#annotated\ cause\ relevant\ clauses}$$

$$F - measure_{clause} = \frac{2 \times Precision_{clause} \times Recall_{clause}}{Precision_{clause} + Recall_{clause}}$$

Task Design

- Subtask 2: Emotion cause extraction
 - To evaluate the techniques for detecting the boundary of the emotion cause
 - An information extraction task
 - Evaluation Metrics: overlapping-based

$$Precision_{phrase} = \frac{1}{\#documents} \sum_{i \in documents} \frac{\text{length of overlapping in document}_i}{\text{length of detected cause in document}_i}$$

$$Recall_{phrase} = \frac{1}{\#documents} \sum_{i \in documents} \frac{\text{length of overlapping in document}_i}{\text{length of annotated cause in document}_i}$$

$$F - measure_{phrase} = \frac{2 \times Precision_{phrase} \times Recall_{phrase}}{Precision_{phrase} + Recall_{phrase}}$$

Task Design

- Lenient Evaluation
 - Subtask 1: the clauses containing either direct cause or elaborated cause are regarded as cause clauses
 - Subtask 2: both the boundaries of direct cause and elaborated cause are valid
- Strict Evaluation
 - Subtask 1: only the clauses containing elaborated cause are regarded as cause clauses
 - Subtask 2: only the boundaries of elaborated cause are valid

Dataset

- The annotation follows the W3C Emotion Markup Language (EML)
- Example:

ISIS blow up pagan temple in Palmyra that has stood for 2,000 years.
The world community is infuriated by this destruction.

Annotation result:

```
<emotion type="Anger" keyword="infuriated"><elaborated_cause POS="n" clause_dis="-1"> ISIS blow up pagan temple in Palmyra that has stood for 2,000 years. </elaborated_cause> The world community is infuriated by <direct_cause POS="n" clause_dis="0"> this destruction. </direct_cause></emotion>
```

Dataset

- Two languages
 - English/Simplified Chinese
- Training Dataset
 - 2,500 paragraphs with emotion and emotion cause annotation
- Testing Dataset
 - 5,00 paragraphs with emotion annotations
- Developing Dataset
 - 10,000 paragraphs with emotions

Schedule

Data	Event
2016-08-15	First call for participation
2017-12-01	Registration due
2017-01-04	Sample data release
2017-07-03	Formal run threads release
2017-07-07	Formal run result due
2017-08-01	Delivery of evaluation results
2017-12	NTCIR-13 Conference & EVIA 2017 in NII, Tokyo, Japan

Welcome to Participate

- Pilot Task Website

<http://hlt.hitsz.edu.cn/ECA.html>

- Reference

Lin Gui, Ruifeng Xu, Dongyin Wu, Qin Lu and Yu Zhou,
Event-Driven Emotion Cause Extraction with Corpus
Construction, Proceedings of EMNLP 2016

THANKS

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