

Universität Stuttgart Institut für Maschinelle Sprachverarbeitung

Emotion Recognition under Consideration of the Emotion Component Process Model

September 9, 2021

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@roman_klinger in romanklinger https://www.romanklinger.de/ KONVENS Conference, Düsseldorf/Online



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Introduction

• Most popular subtask in emotion analysis: Emotion classification



- Which emotion is ...
 - …expressed in a textual message?
 - ...felt by the sender?
 - ...evoked in the reader?
- Exact setup follows from data collection procedure or annotation guidelines.

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Emotion Classification



- Emotion inventories follow psychological models (next slide)
- Systems are often end-to-end transfer learning/ fine-tuning methods from general language models
- Multi-task learning with other concepts often helps
 - Emotion+Sentiment: Akhtar NAACL 2019
 - Emotion+Sentiment+Sarcasm: Chauhan ACL 2020
 - Metaphers+Emotions: Dankers EMNLP 2019
 - Emotions+Genre: Tafreshi CoNLL 2018
 - Emotion+Abusive Language: Rajamanickam ACL 2020

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Emotion Models



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Emotion Analysis: Existing Corpora

Plenty of various corpora available nowadays for various domains:

- Literature: Tales (Alm 2005), REMAN (Kim/Klinger 2018)
- Blogs: Aman/Szpakowicz 2007
- Dialogues: DailyDialogs (Li et al. 2017)
- Event self-reports: ISEAR (Scherer et al. 1994) and de/enISEAR (Troiano/Padó/Klinger 2019)
 Many more, see Bostan/Klinger 2019
- Little research how to transfer models from one domain to another: How do emotion descriptions differ?

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Observations, Motivation and Goals

Observations

- Multi-task learning with other (presumably related) concepts is promising
- Classifiers are typically not informed about emotion theories from psychology
- We do not know a lot about differences in emotion references across domains

Research Goals

- Make use of psychological theories in our models...
- ...to see if that improves emotion classification (via multi-task learning)
- ...to understand how emotions are expressed and how such expressions differ between domains

Outline

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What we need

- An emotion theory that helps us to understand how emotions are described.
- **2** A corpus annotated with that theory and emotions.
- **3** A joint model of that theory and emotions.

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An Emotion Theory: The Emotion Component Process Model

Emotion (Scherer, 2005)

Emotions are "an episode of interrelated, synchronized changes in the states of [...] five organismic subsystems in response to the evaluation of a [...] stimulus-event ..."



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A Corpus annotated with Emotions and Components

- Partial component annotation of two existing emotion-annotated corpora
 - TEC (Tweets, Mohammad *SEM 2012)
 - REMAN (literature, Kim/Klinger COLING 2018)
- Annotation Procedure:
 - Training of two annotators in two rounds, single annotations afterwards.

Component	round 1	round 2
Cognitive appraisal	0.288	0.777
Neurophysiological symptoms	0.459	_
Motiv. Action tendencies	0.444	0.732
Motor expressions	0.643	0.617
Subjective feelings	0.733	0.793

• 2041 Tweets, 1000 sentence triples from Project Gutenberg

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A Corpus annotated with Emotions and Components (2)

Examples

Cognitive

- I can't stop.
- found my old lava lamp!

Bodily Reaction

- She did not know; she trembled.
- Apparently i might have alcohol poisoning. #stupidgirl

Subjective

- Woman-woman-I love thee!
- bad day

Motivation

- We're going out tonight.
- Sometimes I wanna take your head and ram it into mirrors.

Expression

- An expression of annoyance appeared on the emperor's face.
- Finals tomorrow... ugh

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A Joint Model of Emotions and Components



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Joint Model: Does Component Prediction help Emotion Categorization?



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Joint Model: Where does it help?

@justinbieber nocticed a girl the first day she got a twitter! :(

Emotion Emo-NN-Base	joy
CPM, <i>MTL-XS</i>	cognitive appraisal, subjective feeling
Emotion, MTL-XS	sadness
CPM Gold	cognitive appraisal, subjective feeling
Emotion Gold	sadness
when the love of	of your life is half way acrosss the world
Emotion Emo-NN-Base	joy
CPM, <i>MTL-XS</i>	subjective feeling
Emotion, MTL-XS	sadness
CPM Gold	cognitive appraisal
Emotion Gold	sadness

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Summary and Outlook

- We presented the first work that combines emotion component process model with emotion classification
- Emotion component prediction helps to improve emotion classification
- The model is a helpful tool to quantify how emotions are expressed differently in differing domains.

Limitations/Future Work

- The corpus is of a limited size and only includes two domains.
- \Rightarrow Build component corpora for more domains.
- Does the component depend on the topic also?
- What are the reasons for people to chose different components to refer to emotions?
- Does that knowledge help for domain transfer?

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Check out the resources for this paper and others

- https://www.romanklinger.de/data-sets/
- https://www.ims.uni-stuttgart.de/data/emotion

Check out our lecture on emotion analysis! Small appotation exercise Motivation (1) Bittersty of Ballyon Sectors of Ballyon Ballyon Concerning Which emotion is associated with each text? How can you recognize? se annotate the following sentences Classification and intensity confiction · Assign values to sentences or documents · David Beckham gets six-month driving ban for using phone Which downstream questions can be asswered with such Don McGahn fires back at Donald Trump A counter infuriated officials by landing their helicopter in the middle of a nature reserve. · Ma uno o performinant municipa provi otili percebina one happy doing something he loved. Holmes is happy having the freedom of the house whe

https://www.emotionanalysis.de

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Thank you for your attention. Questions? Remarks?





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