

Computer-Linguistische Anwendungen

CLA | B.Sc. | LMU



Beispiel: Sentiment-Analysis

Computerlinguistische Anwendungen



Beispiel: Sentiment-Analysis

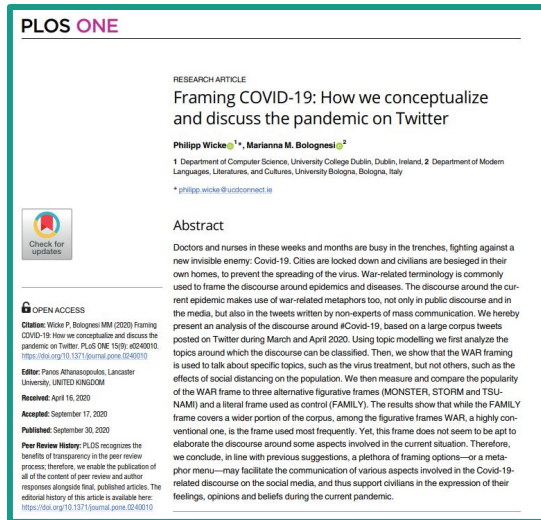
Anwendungsbeispiel

- Sentiment Analysis (Erkennung der Stimmung des Autor/der Autorin) - Opinion Mining
- Erkennen von Meinungen, Werturteilen, Bewertungen, Positiven/Negativen Emotionen
- Für einen gesamten Text oder speziell in Bezug auf eine bestimmte Entität (Produkt, Thema, Person, Ereignis ...)
- Anwendung z.B.
 - in Unternehmen
 - in Sozialforschung

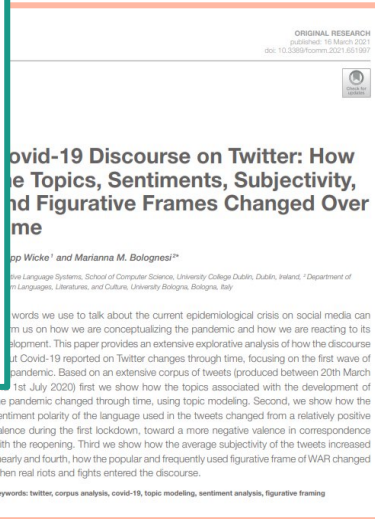


Beispiel: Sentiment-Analysis

Anwendungsbeispiel aus Forschungskontext



Wicke, Philipp, and Marianna M. Bolognesi. "Framing COVID-19: How we conceptualize and discuss the pandemic on Twitter." *PloS one* 15.9 (2020)



Wicke, Philipp, and Marianna M. Bolognesi. "Covid-19 Discourse on Twitter: How the Topics, Sentiments, Subjectivity, and Figurative Frames Changed Over Time." *Frontiers in Communication* 6 (2021): 45.

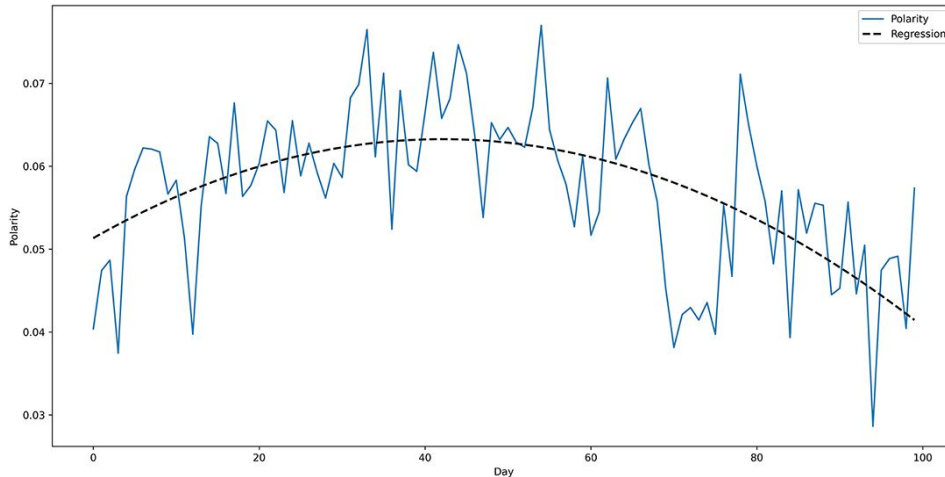


Beispiel: Sentiment-Analysis

Anwendungsbeispiel aus Forschungskontext

Method

For each of the 100 days in our corpus, the average polarity of the words used in the tweets was assessed using *TextBlob* (Loria et al., 2014). Polarity score within the range $[-1.0, 1.0]$ where -1.0 represents a very negative sentiment and 1.0 represents a very positive sentiment. Using polynomial regression to identify best function to describe development of sentiment score.



Wicke, Philipp, and Marianna M. Bolognesi. "Covid-19 Discourse on Twitter: How the Topics, Sentiments, Subjectivity, and Figurative Frames Changed Over Time." *Frontiers in Communication* 6 (2021): 45.

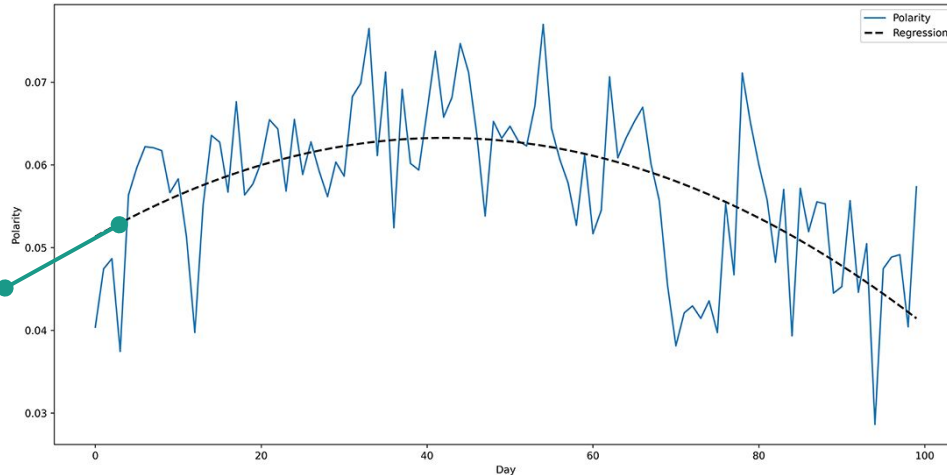
Beispiel: Sentiment-Analysis

Anwendungsbeispiel aus Forschungskontext

Results I

Within the first month of the pandemic, the general attitude of the population tended to be slightly more optimistic. This is the period in time where a series of positively framed hashtags began to emerge, such as #FlattenTheCurve, #StayHomeSavesLives, encouraging people to embrace the difficult situation and hold on tight, in order to fight together against the virus.

“Probably for the best, don't need everyone's grubby hands digging in them spreading corona virus around. #brightside” (20th March 2020)



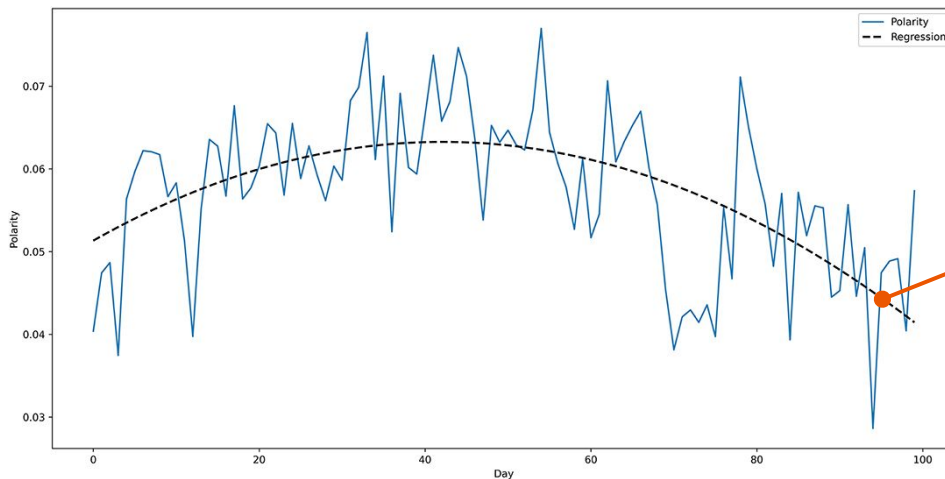
Wicke, Philipp, and Marianna M. Bolognesi. "Covid-19 Discourse on Twitter: How the Topics, Sentiments, Subjectivity, and Figurative Frames Changed Over Time." *Frontiers in Communication* 6 (2021): 45.

Beispiel: Sentiment-Analysis

Anwendungsbeispiel aus Forschungskontext

Results II

It should be noticed that during this first phase (March/early April), the financial and societal repercussions of the lockdown were not yet as obvious and impactful as in the latter half of the 100 days (May/June). During the later dates in fact, the attitude in the collective mind of the population dropped substantially, toward a much more negative end.



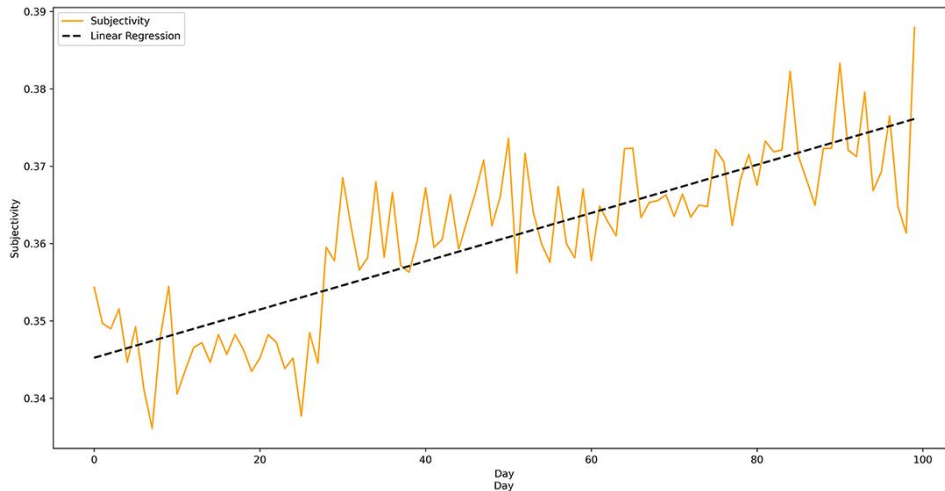
“Bullshit!!! Our country is the worst in the world for the pandemic because of you, not China. Stop blaming everyone else & trying to deflect blame. The state of our country is your fault & yours alone. RESIGN!!!” (1st July 2020)

Beispiel: Sentiment-Analysis

Anwendungsbeispiel aus Forschungskontext

Method

TextBlob: The subjectivity score is in the range $[0.0, 1.0]$ where 0.0 is very objective (facts) and 1.0 is very subjective (opinions). As for the previous analysis, we averaged the subjectivity scores for each day and then we identified the most appropriate function to describe the changes in subjectivity.

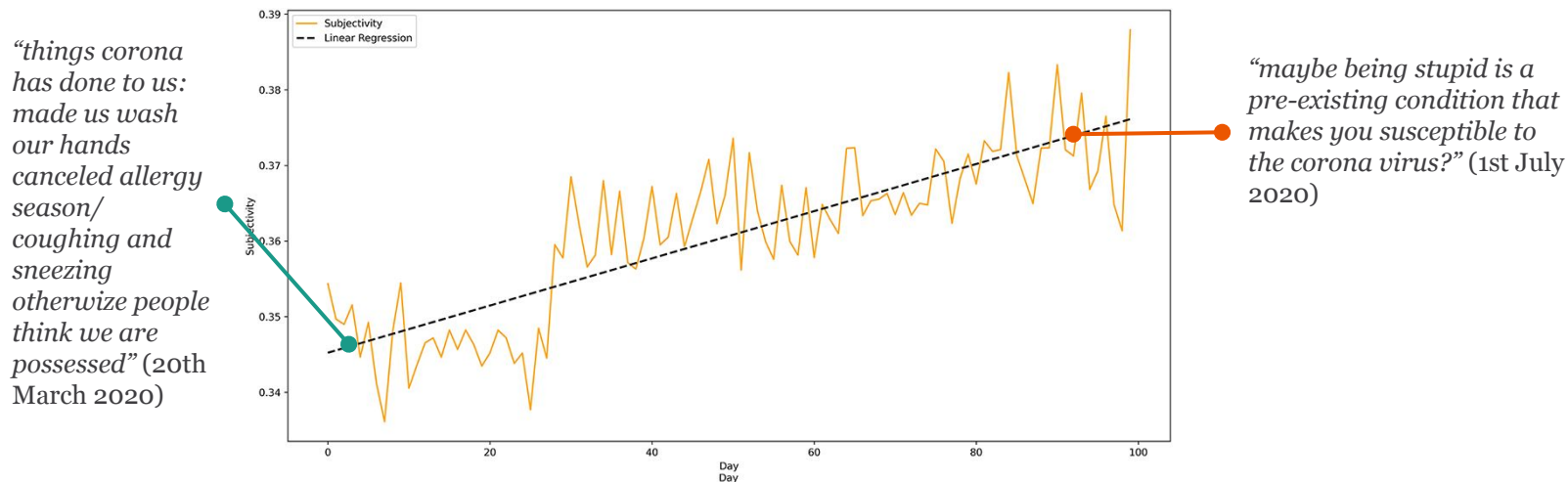


Beispiel: Sentiment-Analysis

Anwendungsbeispiel aus Forschungskontext

Result

Twitter users tend to focus more on their own introspections and to express increasingly more (subjective) opinions than (objective) facts. In other words, the subjectivity of the tweets increases linearly, as a function of time, as we had hypothesized.



Beispiel: Sentiment-Analysis

Anwendungsbeispiel

Posted by: XYZ | Date: September 16, 2011

“The new ABC camera is amazing! I bought it a few months ago and I really like it. The battery life is much longer than that of my previous camera. However, my partner thinks its too heavy and was too expensive.”

- **Entity:** Meinung über ABC camera
- **Aspects:** Batteriedauer, Gewicht, Preis
- **Opinion Holder:** XYZ, XYZ's Partner
- **Sentiment:** Bewertung der jeweiligen Aspekte durch Opinion Holder
- **Date:** September 16, 2011



Beispiel: Sentiment-Analysis

Vereinfachte Problemstellung

- Sentiment-Klassifikation auf Dokumentenebene (1 Sentiment : 1 Autor/in : 1 Dokument)
- Problemstellung: Gegeben ein Opinion-Dokument, bestimme das generelle Sentiment des Opinion Holders gegenüber der Entität.
- (Vereinfachung) Annahmen:
 - Das Dokument drückt genau ein Sentiment aus
 - Der Opinion Holder, die Entität, die Zeit, die Aspekte sind bekannt oder irrelevant.



Beispiel: Sentiment-Analysis

Beispiel: Netflix Reviews

I just finished watching the first season of Euphoria, and let me tell you, it blew me away! The show is a raw, honest, and unflinching look at the lives of high school students, and it doesn't shy away from the tough topics like addiction, bad mental health, and identity crisis. The characters are all so well-written and well-acted that I found myself getting emotionally invested in their stories. And the cinematography and soundtrack are both top-notch, adding to the mood and vibe of the show. I can't wait to see what the next season has in store!

I don't get the hype around Euphoria at all. To me, it just seems like a bunch of over-privileged high schoolers getting into drugs, sex, and drama for the sake of it. The show is trying so hard to be edgy and controversial that it comes off as contrived and shallow. And don't even get me started on the acting - half the time, it feels like the cast is just phoning it in. The only reason I even finished the first season is that I wanted to see if it got any better, but it never did. Save yourself the time and skip this one.

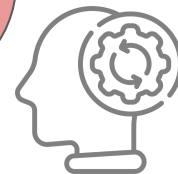


Beispiel: Sentiment-Analysis

Beispiel: Netflix Reviews

*I just finished watching the first season of Euphoria, and let me tell you, it **blew me away!** The show is a raw, honest, and unflinching look at the lives of high school students, and it doesn't shy away from the tough topics like addiction, **bad** mental health, and identity crisis. The characters are all so **well-written** and **well-acted** that I found myself getting emotionally invested in their stories. And the cinematography and soundtrack are both **top-notch**, adding to the mood and vibe of the show. I **can't wait** to see what the next season has in store!*

*I don't get the **hype** around Euphoria at all. To me, it just seems like a bunch of over-privileged high schoolers getting into drugs, sex, and drama for the sake of it. The show is trying so hard to be edgy and controversial that it comes off as **contrived** and **shallow**. And don't even get me started on the acting - half the time, it feels like the cast is **just phoning it in**. The only reason I even finished the first season is that I wanted to see if it got any better, but it never did. Save yourself the time and **skip this one**.*



Beispiel: Sentiment-Analysis

Lösungsvorschlag: Maschinelles Lernen

- Entgegen: Einfacher, naiver Ansatz: Regelbasierte Wortliste (positive Wörter zählen, negative Wörter zählen).
- Stattdessen: Merkmale aus annotierten Daten lernen
 - Vorteile:
 - Benötigt keine von Menschen erstellten Regeln
 - Findet auch Merkmale an die ein Mensch nicht unbedingt denken würde
 - Verschiedene Repräsentationen und Klassifikatoren möglich (z.B. BOW+Naive Bayes, Neuronale Netze, ...)
 - Kann mit regelbasierten Ansätzen verbunden werden (z.B. durch Merkmale: Anzahl der Regeln die passen)
 - ...
 - Nachteile:
 - Benötigt viele annotierte Daten
 - Overfitting, Domänen-abhängig (bei nur Film-Reviews, eventuell unbrauchbar für Tweet-Analyse)
 - Erklärung der “Regeln” für Menschen schwierig
 - ...

