

On the Definition of Prescriptive Annotation Guidelines for Language-Agnostic Subjectivity Detection

F. Ruggeri¹, F. Antici¹, A. Galassi¹, K. Korre², A. Muti², A. Barrón-Cedeño²

¹Department of Computer Science and Engineering (DISI), University of Bologna, Italy

²Department of Interpreting and Translation (DIT), University of Bologna, Italy

Background

Subjectivity

“Feature of language: when making an utterance, the speaker simultaneously expresses their position, attitude, and feelings towards the utterance, thus, leaving their own mark”

[L. Feng, On the subjectivity and intersubjectivity of language, 2020]

Background

Subjectivity

“Feature of language: when making an utterance, the speaker simultaneously expresses their position, attitude, and feelings towards the utterance, thus, leaving their own mark”

[L. Feng, On the subjectivity and intersubjectivity of language, 2020]

Problem

Identification of subjectivity in textual documents

Background

Subjectivity

“Feature of language: when making an utterance, the speaker simultaneously expresses their position, attitude, and feelings towards the utterance, thus, leaving their own mark”

[L. Feng, On the subjectivity and intersubjectivity of language, 2020]

Problem

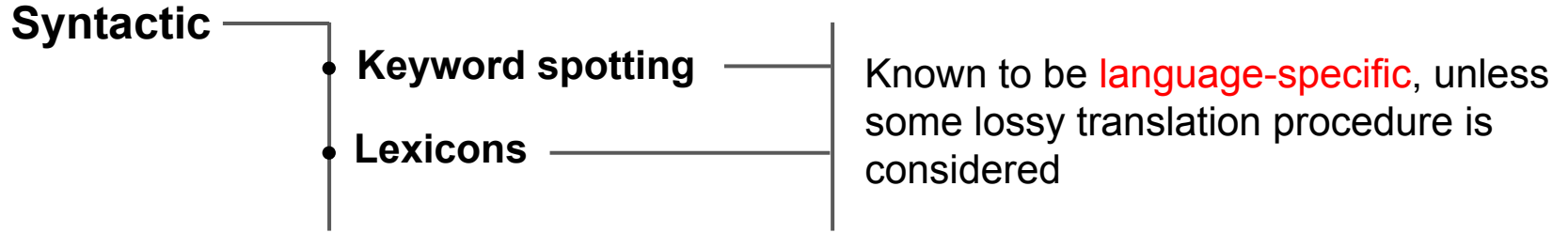
Identification of subjectivity in textual documents

Subjectivity Detection (SD)

Distinguishing subjective content from objective one

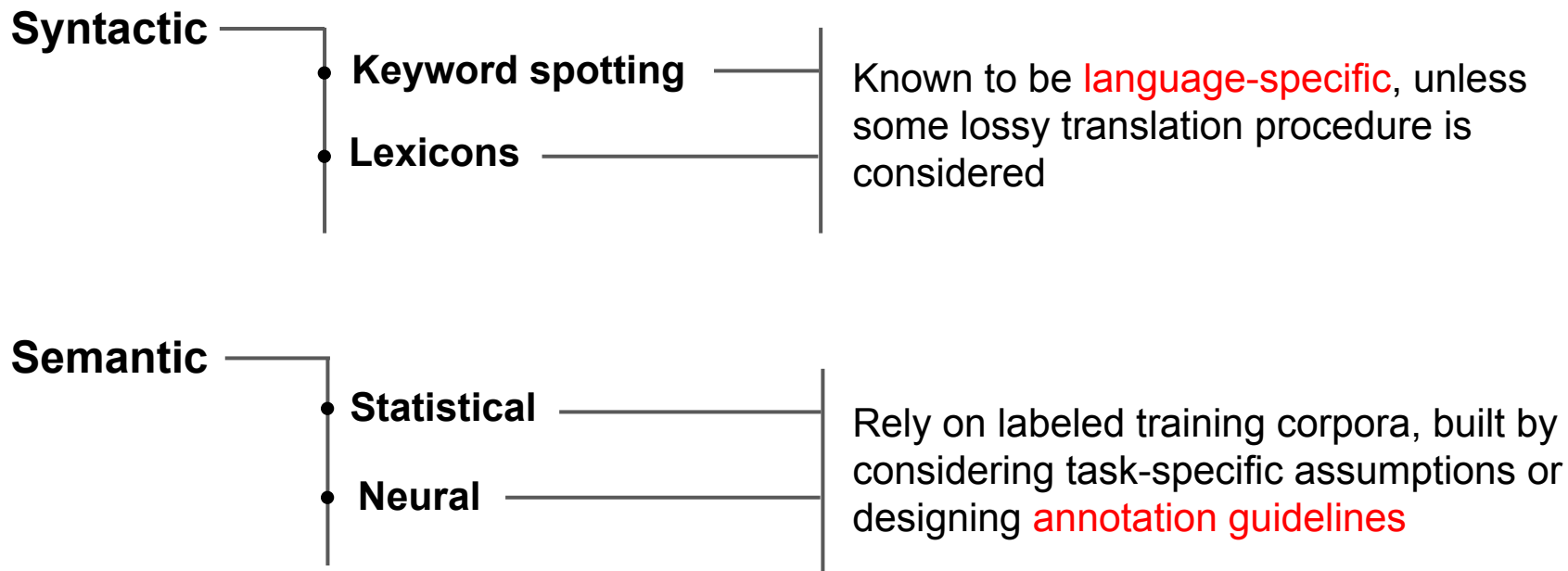
Background

Approaches



Background

Approaches



Contribution

Motivation

- Semantic approaches are **independent from** language-specific lexicons

Contribution

Motivation

- Semantic approaches are **independent from** language-specific lexicons
- Challenge: the perception of subjectivity is **subjective itself** [Chaturvedi et al., 2018]

Contribution

Motivation

- Semantic approaches are **independent from** language-specific lexicons
- Challenge: the perception of subjectivity is **subjective itself** [Chaturvedi et al., 2018]
- Defining practical, non-language-specific, and largely applicable annotation guidelines is a **well-known challenge** [Wilson & Wiebe, 2003]

Contribution

Motivation

- Semantic approaches are **independent from** language-specific lexicons
- Challenge: the perception of subjectivity is **subjective itself** [Chaturvedi et al., 2018]
- Defining practical, non-language-specific, and largely applicable annotation guidelines is a **well-known challenge** [Wilson & Wiebe, 2003]

This work

- We frame SD for a specific task following the **prescriptive annotation paradigm**

Contribution

Motivation

- Semantic approaches are **independent from** language-specific lexicons
- Challenge: the perception of subjectivity is **subjective itself** [Chaturvedi et al., 2018]
- Defining practical, non-language-specific, and largely applicable annotation guidelines is a **well-known challenge** [Wilson & Wiebe, 2003]

This work

- We frame SD for a specific task following the **prescriptive annotation paradigm**
- A methodology for developing **task-oriented** annotation guidelines

Contribution

Motivation

- Semantic approaches are **independent from** language-specific lexicons
- Challenge: the perception of subjectivity is **subjective itself** [Chaturvedi et al., 2018]
- Defining practical, non-language-specific, and largely applicable annotation guidelines is a **well-known challenge** [Wilson & Wiebe, 2003]

This work

- We frame SD for a specific task following the **prescriptive annotation paradigm**
- A methodology for developing **task-oriented** annotation guidelines
- We discuss **open challenges** encountered in our case study

Methodology

We follow the prescriptive paradigm to impose a specific conceptualization of subjectivity for annotation [Röttger et al., 2022]

Methodology

We follow the prescriptive paradigm to impose a specific conceptualization of subjectivity for annotation [Röttger et al., 2022]

Schematic guidelines

- Define subjectivity according to **the objectives of the task**

Methodology

We follow the prescriptive paradigm to impose a specific conceptualization of subjectivity for annotation [Röttger et al., 2022]

Schematic guidelines

- Define subjectivity according to **the objectives of the task**
- Define **schematic guidelines** based on specific real cases
 - Less sensitive to domain- or language-specific cues
 - Eases annotators' training process

Methodology

Iterative refinement

- Agreeing on a set of validated annotation guidelines is a collaborative refinement process

Methodology

Iterative refinement

- Agreeing on a set of validated annotation guidelines is a collaborative refinement process
- Edge case resolution: instances with high disagreement

Methodology

Iterative refinement

- Agreeing on a set of validated annotation guidelines is a collaborative refinement process
- Edge case resolution: instances with high disagreement
- Multiple annotation pilot studies for edge case discovery

Methodology

Iterative refinement

- Agreeing on a set of validated annotation guidelines is a collaborative refinement process
- Edge case resolution: instances with high disagreement
- Multiple annotation pilot studies for edge case discovery
- Iterated until sufficient agreement is reached

Methodology

Iterative refinement

- Agreeing on a set of validated annotation guidelines is a collaborative refinement process
- Edge case resolution: instances with high disagreement
- Multiple annotation pilot studies for edge case discovery
- Iterated until sufficient agreement is reached
- In line with the prescriptive paradigm: high annotator disagreement is a call to action

Methodology

Reliable annotation

- Annotators' training with validated guidelines

Methodology

Reliable annotation

- Annotators' training with validated guidelines
- Multiple annotators per instance to **downplay bias**

Methodology

Reliable annotation

- Annotators' training with validated guidelines
- Multiple annotators per instance to **downplay bias**
- Identification of edge cases

Methodology

Reliable annotation

- Annotators' training with validated guidelines
- Multiple annotators per instance to **downplay bias**
- Identification of edge cases
- **Discussion phase** in case of disagreement

Methodology

Reliable annotation

- Annotators' training with validated guidelines
- Multiple annotators per instance to **downplay bias**
- Identification of edge cases
- **Discussion phase** in case of disagreement
- An additional annotator is considered if disagreement persists

Methodology

Reliable annotation

- Annotators' training with validated guidelines
- Multiple annotators per instance to **downplay bias**
- Identification of edge cases
- **Discussion phase** in case of disagreement
- An additional annotator is considered if disagreement persists
- Discard “low-quality” annotators' labels to address noisy labels

Methodology

Reliable annotation

- Annotators' training with validated guidelines
- Multiple annotators per instance to **downplay bias**
- Identification of edge cases
- **Discussion phase** in case of disagreement
- An additional annotator is considered if disagreement persists
- Discard “low-quality” annotators' labels to address noisy labels
- Report per-instance agreement as measure of **quality assurance**

Case Study - Fact Checking

We elaborate on the presented methodology by discussing a case study on fact-checking

Case Study - Fact Checking

We elaborate on the presented methodology by discussing a case study on fact-checking

Domain

English and Italian news articles targeting on-going **controversial topics** like political affairs, civil-rights and economics

Case Study - Fact Checking

We elaborate on the presented methodology by discussing a case study on fact-checking

Domain

English and Italian news articles targeting on-going **controversial topics** like political affairs, civil-rights and economics

Task

Discriminate between subjective and objective sentences in news articles

Case Study - Fact Checking

We elaborate on the presented methodology by discussing a case study on fact-checking

Domain

English and Italian news articles targeting on-going **controversial topics** like political affairs, civil-rights and economics

Task

Discriminate between subjective and objective sentences in news articles

Soundness

The detection and processing of subjective content has the final purpose of creating an objective narrative upon which fact-checking relies

Case Study - Fact Checking

- Initial set of annotation guidelines [**Schematic guidelines**]

Case Study - Fact Checking

- Initial set of annotation guidelines [**Schematic guidelines**]
- Six annotators with near-native knowledge of English and Italian languages

Case Study - Fact Checking

- Initial set of annotation guidelines [**Schematic guidelines**]
- Six annotators with near-native knowledge of English and Italian languages
- Two pilot studies for guidelines validation [**Iterative refinement**]

Case Study - Fact Checking

- Initial set of annotation guidelines [**Schematic guidelines**]
- Six annotators with near-native knowledge of English and Italian languages
- Two pilot studies for guidelines validation [**Iterative refinement**]
- IAA **increases** between pilot studies (from 0.39 to 0.53) [**Reliable annotation**]

Case Study - Fact Checking

- Initial set of annotation guidelines [**Schematic guidelines**]
- Six annotators with near-native knowledge of English and Italian languages
- Two pilot studies for guidelines validation [**Iterative refinement**]
- IAA **increases** between pilot studies (from 0.39 to 0.53) [**Reliable annotation**]
- Comparable results and observations **between languages**

Case Study - Fact Checking

- Initial set of annotation guidelines [**Schematic guidelines**]
- Six annotators with near-native knowledge of English and Italian languages
- Two pilot studies for guidelines validation [**Iterative refinement**]
- IAA **increases** between pilot studies (from 0.39 to 0.53) [**Reliable annotation**]
- Comparable results and observations **between languages**

Two important aspects

- *The importance of contextual information*
- *Edge cases resolution*

Contextual Information

The lack of context may lead to ambiguous annotation cases since we work at sentence level.

Contextual Information

The lack of context may lead to ambiguous annotation cases since we work at sentence level.

- We arrange annotators in **two groups**

Contextual Information

The lack of context may lead to ambiguous annotation cases since we work at sentence level.

- We arrange annotators in **two groups**
- Group 1 annotates sentences in news articles in **order of appearance** and can leverage other sentences in the article for annotation

Contextual Information

The lack of context may lead to ambiguous annotation cases since we work at sentence level.

- We arrange annotators in **two groups**
- Group 1 annotates sentences in news articles in **order of appearance** and can leverage other sentences in the article for annotation
- Group 2 annotates sentences in news articles in **random order** and can't leverage context

Contextual Information

The lack of context may lead to ambiguous annotation cases since we work at sentence level.

- We arrange annotators in **two groups**
- Group 1 annotates sentences in news articles in **order of appearance** and can leverage other sentences in the article for annotation
- Group 2 annotates sentences in news articles in **random order** and can't leverage context
- IAA – Group 1: 0.38; Group 2: 0.53

Contextual Information

The lack of context may lead to ambiguous annotation cases since we work at sentence level.

- We arrange annotators in **two groups**
- Group 1 annotates sentences in news articles in **order of appearance** and can leverage other sentences in the article for annotation
- Group 2 annotates sentences in news articles in **random order** and can't leverage context
- IAA – Group 1: 0.38; Group 2: 0.53
- We opt for a **contextless annotation**
 - Context leads to higher annotators' workload
 - Context may not be available in some domains like in Tweets

Edge cases

Example of edge cases encountered in our case study.

- (a) Emotions *He looked like he was on the verge of crying.*
 - (b) Quotes *“Crosbie is an extremely violent man who has no place in society, and we welcome the jury’s verdict today.”*
 - (c) Intensifiers *Recognising that, last Friday the US announced a further \$600m of military aid to Ukraine, including more Himars rockets that have so damaged Moscow’s logistics and its ability to resist.*
 - (d) Speculations *Putin will hope to sow uncertainty in the eyes of policymakers’ meetings in New York.*
-

Edge cases

Example of edge cases encountered in our case study.

- | | |
|------------------|---|
| (a) Emotions | <i>He looked like he was on the verge of crying.</i> |
| (b) Quotes | <i>“Crosbie is an extremely violent man who has no place in society, and we welcome the jury’s verdict today.”</i> |
| (c) Intensifiers | <i>Recognising that, last Friday the US announced a further \$600m of military aid to Ukraine, including more Himars rockets that have so damaged Moscow’s logistics and its ability to resist.</i> |
| (d) Speculations | <i>Putin will hope to sow uncertainty in the eyes of policymakers’ meetings in New York.</i> |
-

Emotions

- Convey a subjective point of view [Mihalcea et al., 2012; Veronika, 2006]
- But they cannot be verified since emotions are based on the author’s belief and sensations only (feeling an emotion is a fact for the person sensing it)

Edge cases

Example of edge cases encountered in our case study.

- | | |
|------------------|---|
| (a) Emotions | <i>He looked like he was on the verge of crying.</i> |
| (b) Quotes | <i>“Crosbie is an extremely violent man who has no place in society, and we welcome the jury’s verdict today.”</i> |
| (c) Intensifiers | <i>Recognising that, last Friday the US announced a further \$600m of military aid to Ukraine, including more Himars rockets that have so damaged Moscow’s logistics and its ability to resist.</i> |
| (d) Speculations | <i>Putin will hope to sow uncertainty in the eyes of policymakers’ meetings in New York.</i> |
-

Emotions *[Objective]*

- Convey a subjective point of view [Mihalcea et al., 2012; Veronika, 2006]
- But they cannot be verified since emotions are based on the author’s belief and sensations only (feeling an emotion is a fact for the person sensing it)

Edge cases

Quotes

- Quoted content may be subjective
- We are only interested on the author of the article subjectivity

Edge cases

Quotes *[Objective]*

- Quoted content may be subjective
- We are only interested on the author of the article subjectivity

Edge cases

Quotes *[Objective]*

- Quoted content may be subjective
- We are only interested on the author of the article subjectivity

Intensifiers

- Their presence could be symptomatic of the author's personal point of view

Edge cases

Quotes *[Objective]*

- Quoted content may be subjective
- We are only interested on the author of the article subjectivity

Intensifiers *[Subjective]*

- Their presence could be symptomatic of the author's personal point of view

Edge cases

Quotes *[Objective]*

- Quoted content may be subjective
- We are only interested on the author of the article subjectivity

Intensifiers *[Subjective]*

- Their presence could be symptomatic of the author's personal point of view

Speculations

- It is difficult to judge implicit statements without leveraging our own interpretation bias
- Authors make use of speculation to allude to their own interpretation of events

Edge cases

Quotes *[Objective]*

- Quoted content may be subjective
- We are only interested on the author of the article subjectivity

Intensifiers *[Subjective]*

- Their presence could be symptomatic of the author's personal point of view

Speculations *[Subjective]*

- It is difficult to judge implicit statements without leveraging our own interpretation bias
- Authors make use of speculation to allude to their own interpretation of events

Conclusions

We have...

- Presented our work on developing annotation guidelines for task-oriented SD

Conclusions

We have...

- Presented our work on developing annotation guidelines for task-oriented SD
- Introduced a methodology based on the prescriptive paradigm to provide a task-specific definition of subjectivity

Conclusions

We have...

- Presented our work on developing annotation guidelines for task-oriented SD
- Introduced a methodology based on the prescriptive paradigm to provide a task-specific definition of subjectivity
- Described an application of our methodology to a preliminary case study on fact-checking in two languages

Conclusions

We have...

- Presented our work on developing annotation guidelines for task-oriented SD
- Introduced a methodology based on the prescriptive paradigm to provide a task-specific definition of subjectivity
- Described an application of our methodology to a preliminary case study on fact-checking in two languages
- Discussed and proposed a solution for encountered edge cases

References

- L. Feng, On the subjectivity and intersubjectivity of language, in: *Communication and Linguistics Studies*, volume 6, 2020, pp. 1–5.
- T. Wilson, J. Wiebe, Annotating opinions in the world press, in: *Proceedings of the SIGDIAL 2003 Workshop, The 4th Annual Meeting of the Special Interest Group on Discourse and Dialogue*, July 5-6, 2003, Sapporo, Japan, The Association for Computer Linguistics, 2003, pp. 13–22
- Chaturvedi, E. Cambria, R. E. Welsch, F. Herrera, Distinguishing between facts and opinions for sentiment analysis: Survey and challenges, *Inf. Fusion* 44 (2018) 65–77.
- P. Röttger, B. Vidgen, D. Hovy, J. B. Pierrehumbert, Two contrasting data annotation paradigms for subjective NLP tasks, in: M. Carpuat, M. de Marneffe, I. V. M. Ruíz (Eds.), *Proceedings of the 2022 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies, NAACL 2022*, Seattle, WA, United States, July 10-15, 2022, Association for Computational Linguistics, 2022, pp. 175–190.

References

R. Mihalcea, C. Banea, J. Wiebe, Multilingual subjectivity and sentiment analysis, in: Proceedings of the 50th Annual Meeting of the Association for Computational Linguistics: Tutorial Abstracts, Association for Computational Linguistics, Jeju Island, Korea, 2012, p. 4

K. Veronika, Subjectivity and emotions as sources of insight in an ethnographic case study: A tale of the field, *M@n@gement* 9 (2006) 117–135.

Backup Additional Slides

News Sources

Table 2

Sources considered for the pilot studies.

English		Italian	
frontpagemag.com	shtfplan.com	fascinazione.it	ilfoglio.it
telegraph.co.uk	theguardian.com	avantionline.it	liberoquotidiano.it
vdare.com		avvenire.it	

For each study, we randomly sample up to six articles (~150 sentences on average)

All annotators label the sampled articles at the sentence level

Annotation Guidelines

Initial set of annotation criteria

- (i) *it explicitly reports the personal opinion of its author;*
- (ii) *it contains sarcastic or ironic expressions;*
- (iii) *it contains exhortations or personal auspices;*
- (iv) *it contains discriminating or downgrading expressions;*
- (v) *it contains rhetorical figures explicitly made by its author to convey their opinion;*
- (vi) *it contains a conclusion made by its author that is drawn despite insufficient factual information.*

Annotation Guidelines

After first pilot study

- (vii) *a sentence is objective when it describes the personal feelings, emotions or moods of its author, without conveying opinions on other matters;*
- (viii) *a sentence is objective if it expresses an opinion, claim, emotion, or a point of view that is explicitly attributable to a third-party (e.g., a person mentioned in the text). The presence of quotation marks (“ ”), when used to quote a third person (be it at the beginning of the sentence, at the end, or both), represents an explicit third-party opinion, even if it is not clearly stated in the sentence.*

Additionally, annotation criteria (i) is modified to explicitly address rhetorical questions: *rhetorical questions are considered as an expression of opinion.*

Annotation Guidelines

After second pilot study

(ix) *a sentence is subjective if it contains intensifiers that can be attributed to its author to express their opinion.*

Moreover, annotation criteria (i) is modified to address speculations: *speculations that draw conclusions are considered opinions.*