About I-CAB
Annotating private states
Inter-annotator agreement (IAA)
Conclusion: problems with the markup language

Annotating Expressions of Opinion and Emotion in the Italian Content Annotation Bank (I-CAB)

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Outlines

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I-CAB corpus
I-CAB semantic annotations

I-CAB corpus

The Italian language corpus used as reference resource and benchmark for Evalita 2007 (evaluation compain for NLP tools for the Italian language)

- 525 articles from a local newspaper *L'Adige*

    Training corpus $\rightarrow$ 335 art.
    Test corpus $\rightarrow$ 190 art.

- Topics:

    Current events $\rightarrow$ 87 art.
    Cultural news $\rightarrow$ 72 art.
    Economic news $\rightarrow$ 54 art.
    Sport news $\rightarrow$ 123 art.
    Local news $\rightarrow$ 189 art.

About I-CAB
Annotating private states
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I-CAB corpus
I-CAB semantic annotations

I-CAB semantic annotations

Type of semantic annotation:

- temporal expression (4.533)
- named entity (7.087)

  person
  organization
  geo-political
  locations

- entity mentions (16.059)

- relations between entities

- events

- "private states" (10.218)

  training (6.539)
  test (3.679)

About I-CAB
Annotating private states
Inter-annotator agreement (IAA)
Conclusion: problems with the markup language

Markup language
Annotation tool: GATE

Annotating I-CAB by the *expressions of private state* (EPSs)

A private state is "an internal state that cannot be directly observed by others", and as such includes "opinions , beliefs, thoughts, feeling, emotions, goals, evaluations and judgments"

p.128, Wiebe et al. 2005

Markup language: the one used in Wiebe et al. 2005 to annotate by EPSs the MPQA (Multi Perspective Question Answering corpus)

https://rrc.mitre.org/pubs/02_results/mpqa.html

About I-CAB
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Inter-annotator agreement (IAA)
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Elements for annotating opinion

- The explicit mention of a private state (e.g., "I **fear** the Greeks, even when they bring presents"): DIRECT SUBJECTIVE

- A speech event expressing a private state (e.g., "You **said** you love her."): DIRECT SUBJECTIVE

- An expressive subjective element (e.g., "He is a **nice** person"): EXPRESSIVE SUBJECTIVITY

About I-CAB
Annotating private states
Inter-annotator agreement (IAA)
Conclusion: problems with the markup language

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Attributes for elements

DIRECT SUBJECTIVE

- `Nested-source`: the chain of agent source
- `Nested-target`: the chain of agent source + the target of the private Direct subjective
- `Expression-intensity` (neutral to extreme)
- `Intensity` (low to extreme)
- `Polarity` (positive/negative/other/none)
- `Insubstantial` (true/false)

EXPRESSIVE SUBJECTIVITY

- `Nested-source`: the chain of agent sources
- `Intensity` (low to extreme)
- `Polarity` (positive/negative/other/none)

About I-CAB
Annotating private states
Inter-annotator agreement (IAA)
Conclusion: problems with the markup language

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Annotating private states: an example 1/3

Mary **hopes** *that John says she is beautiful*

DIRECT SUBJECTIVE:

- Span: "hopes"
- Nested-source: writer,Mary
- Nested-target: writer,Mary,John
- Expression-intensity: medium
- Intensity: medium
- Polarity: positive
- Insubstantial: false

About I-CAB
Annotating private states
Inter-annotator agreement (IAA)
Conclusion: problems with the markup language

Markup language
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Annotating private states: an example 2/3

*Mary hopes that John **says** she is beautiful*

DIRECT SUBJECTIVE:

- `Span`: "says"
- `Nested-source`: writer,Mary,John
- `Nested-target`: writer,Mary,John,Mary
- `Expression-intensity`: neutral
- `Intensity`: medium
- `Polarity`: positive
- `Insubstantial`: true

About I-CAB
Annotating private states
Inter-annotator agreement (IAA)
Conclusion: problems with the markup language

Markup language
Annotation tool: GATE

Annotating private states: an example 3/3

Mary hopes that John says she is **beautiful**

EXPRESSIVE SUBJECTIVITY:

- `Span`: "beautiful"
- `Nested-source`: writer,Mary,John
- `Intensity`: medium
- `Polarity`: positive

About I-CAB
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Other elements of markup

- The opinion holder or the target of a private state ("**I** love **pizza**"): AGENT

- Reported speech about something objective ("You **say** you're 30"): OBJECTIVE SPEECH EVENT

- The scope of a speech event ("You accuse him **of stealing your pen** "): INSIDE

About I-CAB
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Inter-annotator agreement (IAA)
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Annotation tool: GATE

GATE: developed by University of Sheffield

http://gate.ac.uk

Final format: MEAF (Bentivogli et al., 2003)

We created a conversion tool from GATE to MEAF format

Advantage of conversion

We can navigate across the different level of annotation in I-CAB to find relevant information: we linked agents (at opinion level of annotation) to named entities (when possible)

About I-CAB
Annotating private states
Inter-annotator agreement (IAA)
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Why and how to assess IAA
Results

Why inter-annotator agreement

To test the quality of annotation

To verify the uncontroversial of tags in markup language

Both annotators have approximately the same education
(Computers and the Humanities studies)

Annotators alignment: 10 articles (7 training, 3 test)

Articles independently annotated: 124 (94 training, 33 test), 24 %
of the total

About I-CAB
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Conclusion: problems with the markup language

Why and how to assess IAA
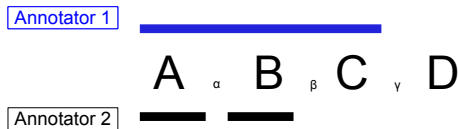Results

How to assess IAA: measures

We need to calculate the value of IAA for each element

Overlap model (Wiebe et al., '2005): the annotations for each element are considered as the atomic object to assess agreement (even if composed by more than one word);

Token model (Esuli et al., 2008): multi-words annotation are split in word. Each word is considered the atomic object to assess agreement;

Token&Blank model (Esuli et al., 2008): an extension of Token model: both words and their separating blank are used in assessing agreement

About I-CAB
Annotating private states
Inter-annotator agreement (IAA)
Conclusion: problems with the markup language

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Measure of agreement: an example

- **Overlap model**: perfect agreement;
- **Token model**: agreement on A and B, disagreement on C;
- **Token & Blank model**: value of agreement lower than the previous two; agreement on A and B, disagreement on C and on the blanks α and β.

About I-CAB
Annotating private states
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Conclusion: problems with the markup language

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Results

Results

	# of ann.		Overlap		Token		T&B	
	A	B	AGR	F1	K	F1	K	F1
Agent	1239	859	.539	.521	.442	.481	.439	.472
Direct subjective	263	246	.507	.507	.432	.442	.414	.422
Expressive subjectivity	924	467	.602	.537	.370	.392	.339	.357
Inside	491	563	.767	.763	.717	.793	.718	.791
Objective speech event	132	144	.501	.500	.471	.476	.462	.465

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Opinion holder
Non-contiguous span
Clitics

Markup language: opinion holder

Opinion holder not specified (or never written in the text)

your behavior is considered unethical

no explicit (mentioned) opinion holder

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Markup language: non-contiguous span

The span of an element could not necessarily occur in contiguous peaces of text

"it will take some time - the colonel said - before things improved"

We annotated the fragments as two distinct element and we added two attribute "id" and "link" to express the interdependence

INSIDE (span: *it will take some time*; **id: in1; link: in2**; source: . . .)

INSIDE (span: *before things improved*; **id: in2; link: in1**; source: . . .)

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Conclusion: problems with the markup language

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Markup language: clitics

Italian allows direct and indirect personal pronoun to appear as clitic (unlike English)

Criticarlo = criticare + lo → criticize + him

Annotation of the closest co-referring word

About I-CAB
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Inter-annotator agreement (IAA)
Conclusion: problems with the markup language

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Thanks!

Questions . . .

About I-CAB
Annotating private states
Inter-annotator agreement (IAA)
Conclusion: problems with the markup language

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Observations on IAA results

	# of ann.		Overlap		Token		T&B	
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1 Results for Token model and Token&Blank model are close to each other both for K and F1

2 Higher agreement on INSIDE, lower on EXPRESSIVE SUBJECTIVITY (number of annotation in A and in B)

3 Results for Overlap model are significantly different from the ones of Token and Token&Blank models