

Annotation Practices & Guidelines

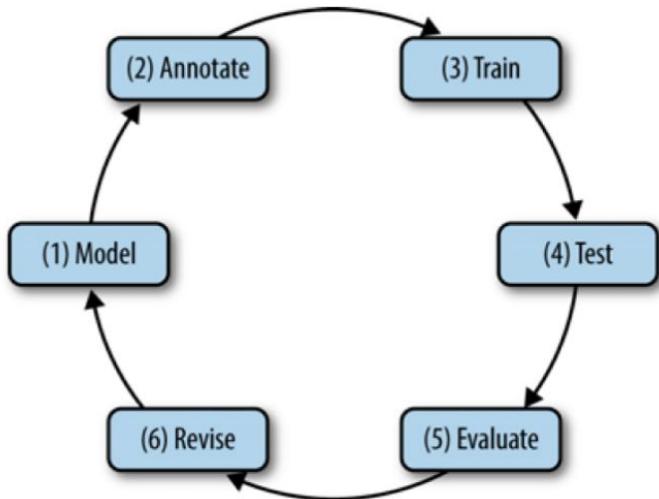
Annotation for Machine Learning | 2022-05-03

Overview

- Ways to collect annotations
traditional, crowdsourcing, gamification
- Developing annotation guidelines
labels, extents, links
- Project Presentation: Assignment 1.1
Team Bicycle Chain
- Cutting-edge: real annotation & guidelines
VU Vaccination Corpus

Ways to get annotations

MATTER: Annotation



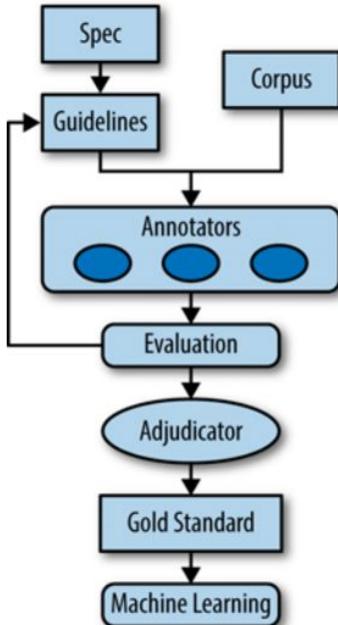
Define the method how the model is applied to text

- Describe the task to annotators
- Tools are used to annotate

Adjudicate

- create the gold standard annotation from the annotations

Traditional Annotation Projects

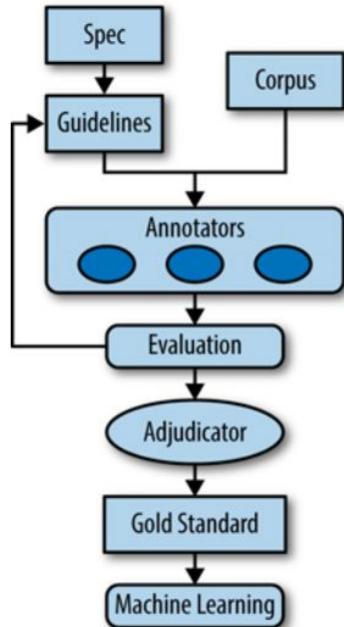


Time and costs

Test the definition of the task

- Guidelines are not well written
- The task is flawed

Traditional Annotation Projects



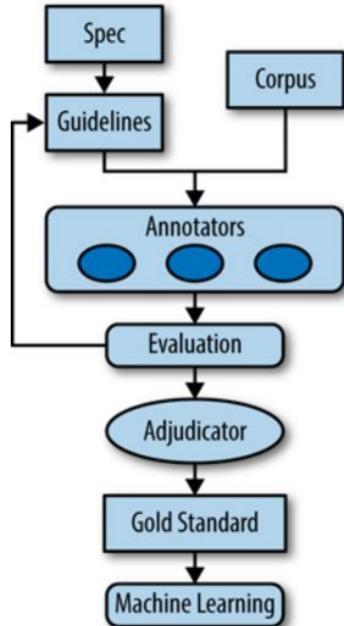
Why distributed
annotation
(by non-experts)?

Time and costs

Test the definition of the task

- Guidelines are not well written
- The task is flawed

Traditional Annotation Projects



Why distributed
annotation
(by non-experts)?

Time and costs

Test the definition of the task

- Guidelines are not well written
- The task is flawed

Inter-Announcer
Agreement scores

Crowdsourcing Annotations

Large data annotation

= much annotation \times several annotators

= **a few annotation \times a lot of annotators**

Human intelligence tasks (HIT, by Amazon MTurk)

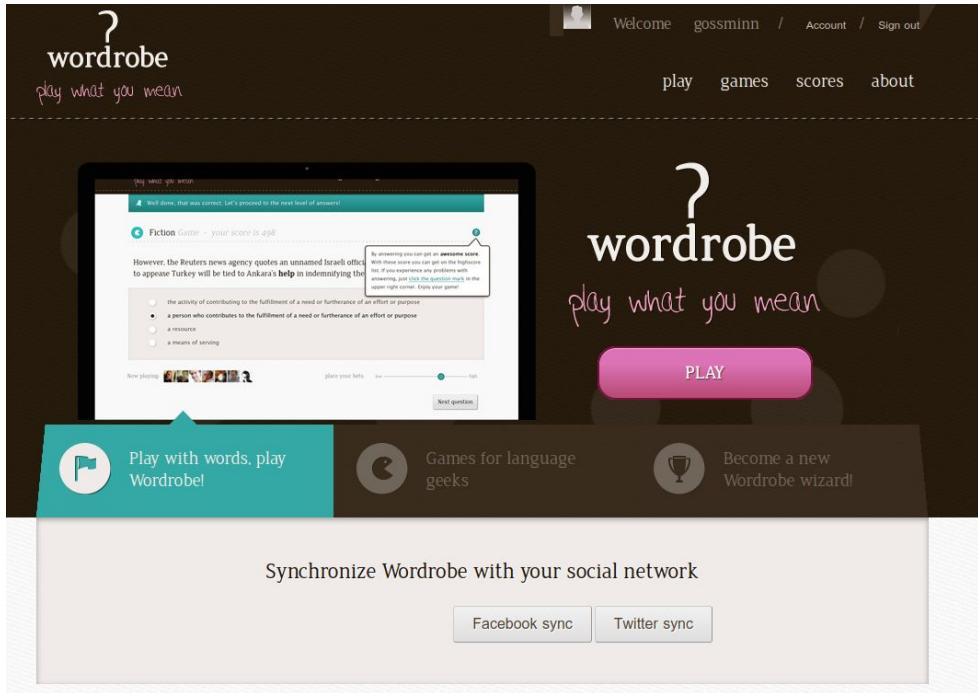
Short annotation guidelines per HIT

Requires the annotation task to be *chopped*



amazonmechanical turk

Alternative Crowdsourcing: Gamification

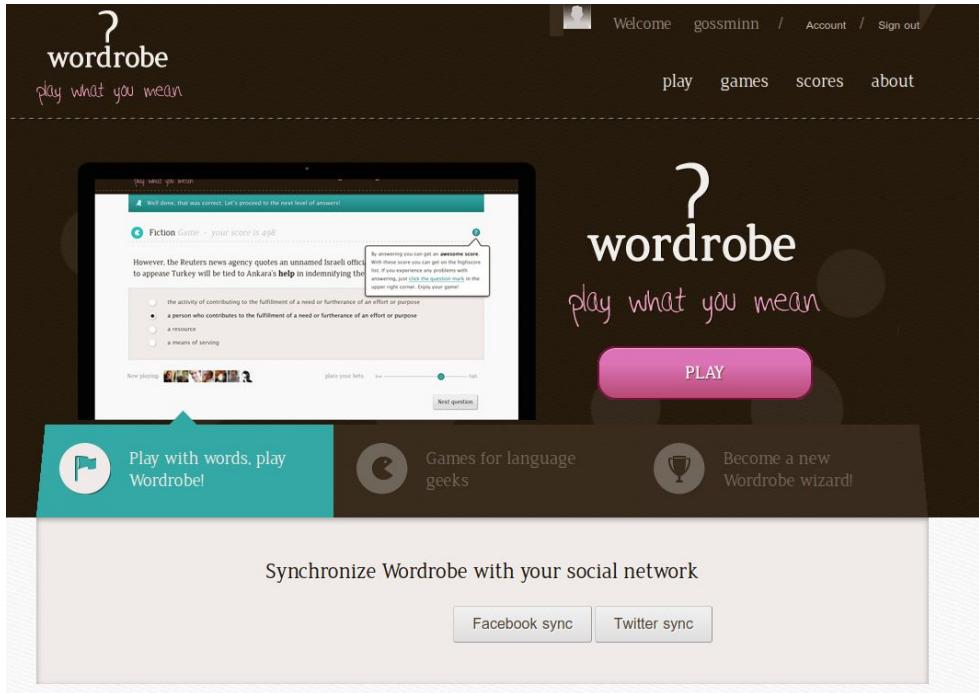


<https://wordrobe.housing.rug.nl/Wordrobe/public/HomePage.aspx>

- Money not the only possible reward
- Gamification
 - Try to make annotation a task that people do for fun
 - Competition: earn points, compare on leaderboards

Venuizen et al. (2013), "Gamification for Word Sense Labeling", *10th International Conference on Computational Semantics*

Alternative Crowdsourcing: Gamification

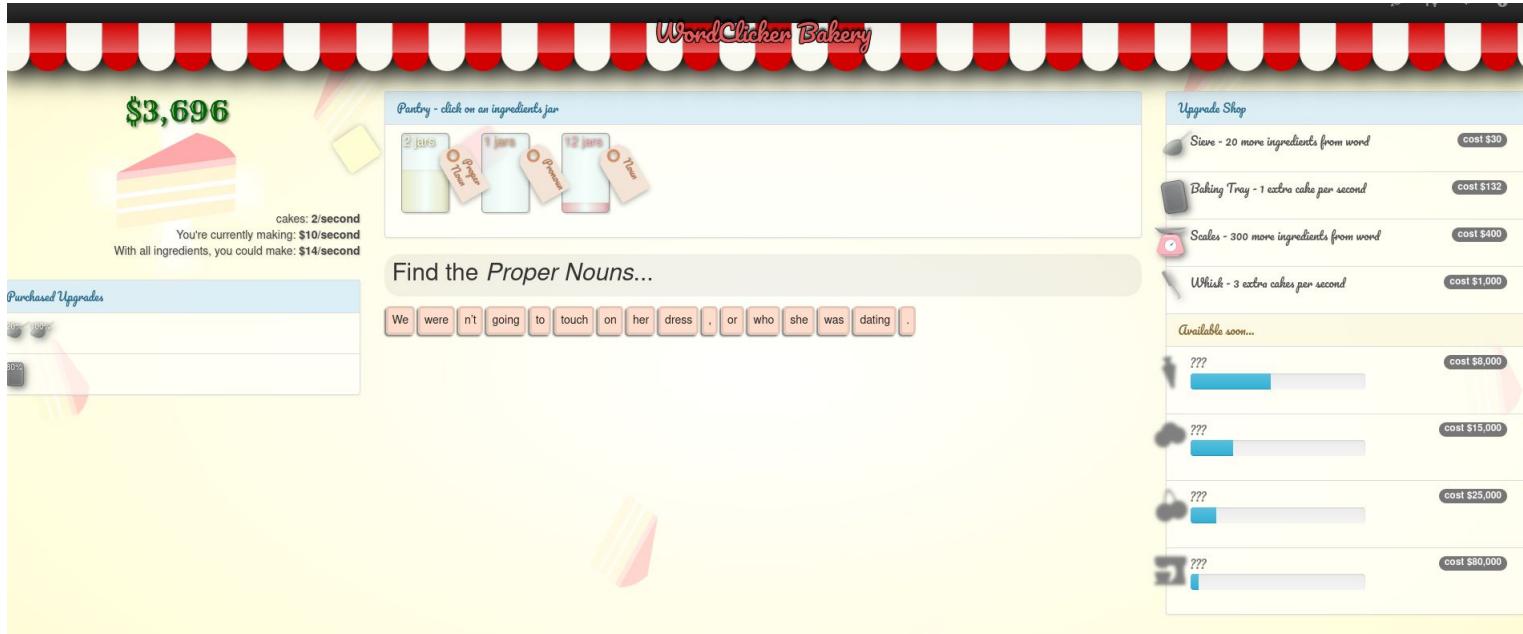


<https://wordrobe.housing.rug.nl/Wordrobe/public/HomePage.aspx>

- Money not the only possible reward
- Gamification
 - Try to make annotation a task that people do for fun
 - Competition: earn points, compare on leaderboards
- Issues
 - How to award points? (What is the right answer?)
 - How to make the game interesting?

Venuizen et al. (2013), "Gamification for Word Sense Labeling", *10th International Conference on Computational Semantics*

Alternative Crowdsourcing: Gamification

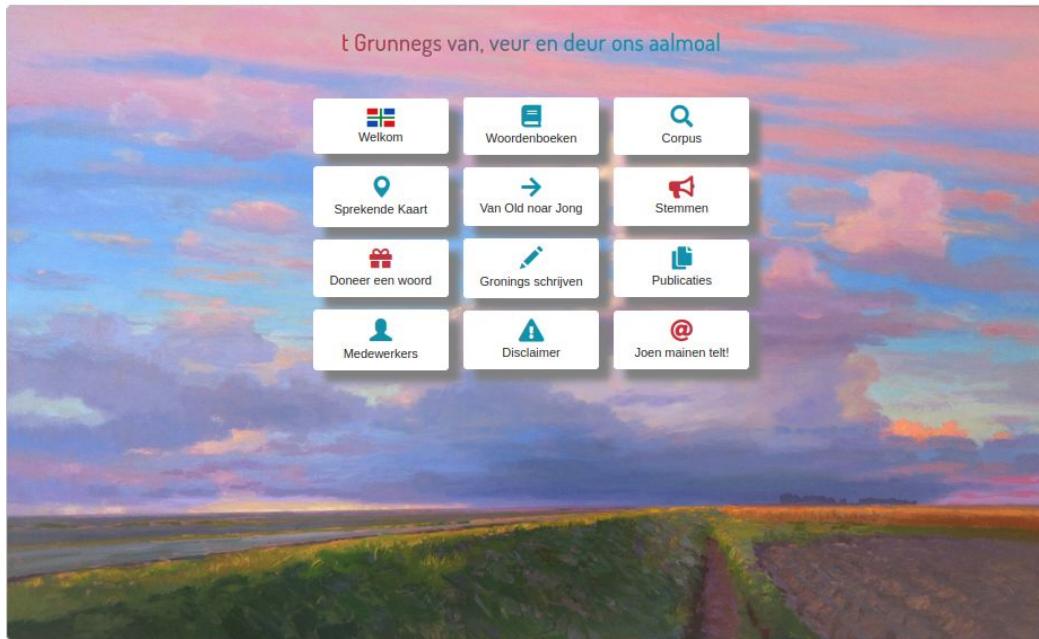


<https://wordclicker.com/>

Madge et al. (2019), "Making Text Annotation Fun with a Clicker Game", *14th International Conference on the Foundations of Digital Games*

Alternative crowdsourcing: intrinsic motivation

WoordWaark



- Collect annotations from a community that directly benefits from your project
- Example: minority language documentation / preservation

Alternative crowdsourcing: intrinsic motivation

WoordWaark

Start! Over Contact Privacy Policy

Luister naar onderstaande opnames en klik op de variant die zo dicht mogelijk ligt bij de woordkeuze en de uitspraak die jij gebruikt in je eigen dialect. Er is geen goed of fout antwoord. Door middel van jouw keuze proberen we te raden waar je vandaan komt.

Hoe zeg jij in je eigen uitspraak het woord «wij kloppen»?

| | | |
|--|--------------------------|--|
| | wie klo'm (vi klɔ?m) | <input checked="" type="checkbox"/> Kies |
| | wie klop'm (vi klɔpm) | <input checked="" type="checkbox"/> Kies |
| | wai klopt (vai klɔpt) | <input checked="" type="checkbox"/> Kies |
| | wei klopt (vei klɔpt) | <input checked="" type="checkbox"/> Kies |
| | wie kloppen (vi klɔpən) | <input checked="" type="checkbox"/> Kies |
| | woele klopt (wulə klɔpt) | <input checked="" type="checkbox"/> Kies |
| | wie klopt (vi klɔpt) | <input checked="" type="checkbox"/> Kies |
| | wie klopts (vi klɔpts) | <input checked="" type="checkbox"/> Kies |
| | wei kla'm (vei kla?m) | <input checked="" type="checkbox"/> Kies |
| | woi klop'm (voi klɔpm) | <input checked="" type="checkbox"/> Kies |

CGTC Centrum Groninger Taal & Dialect

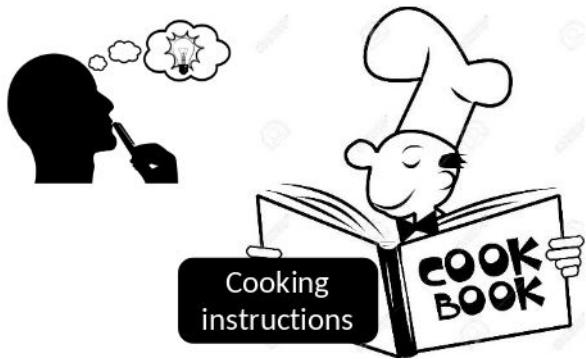
riksuniversiteit groningen



- Collect annotations from a community that directly benefits from your project
- Example: minority language documentation / preservation

Developing guidelines

Guidelines <> specifications



How to apply
an annotation
specification to
the data

Annotation
schema – how to
format annotation



Ingredients



Concrete
representation of
an annotation goal

```
<?xml version="1.0"?>
<!DOCTYPE bib [
  <!ELEMENT bib (book+)>
  <!ELEMENT book (title, (author+ | editor+), publisher, price)>
  <!ATTLIST book year CDATA #REQUIRED>
  <!ELEMENT author (last, first)>
  <!ELEMENT editor (last, first, affiliation)>
  <!ELEMENT title (#PCDATA)>
  <!ELEMENT last (#PCDATA)>
  <!ELEMENT first (#PCDATA)>
  <!ELEMENT affiliation (#PCDATA)>
  <!ELEMENT publisher (#PCDATA)>
  <!ELEMENT price (#PCDATA)>
]>
```

Domain & annotators' knowledge
matter for the guidelines



Prepare data for annotation

Format to convert the data into

- compatible with annotation tool (if any)



BIAS

Information to present to annotators

- **Metadata**

- The source of a document

Movie reviews: rating & opinion
Facts in news: source & factuality

- **Pre-marked up**

- Necessary for annotators?



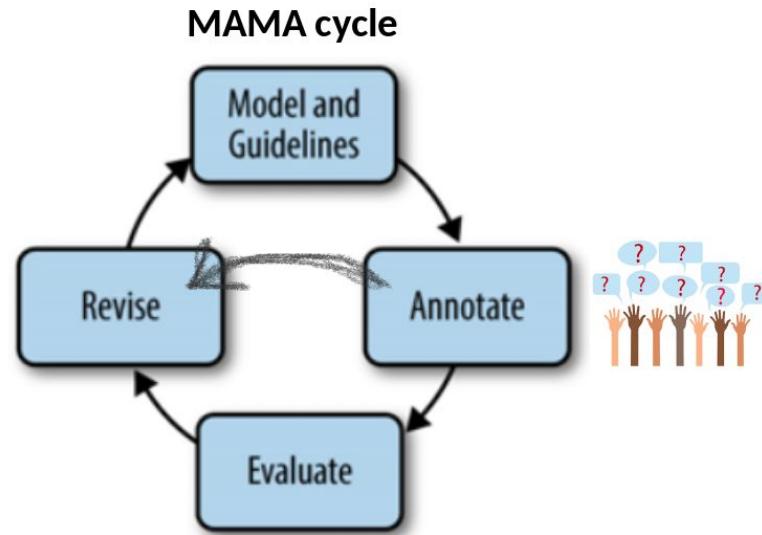
Too much info can lower
annotators' accuracy

- Is the info correct?

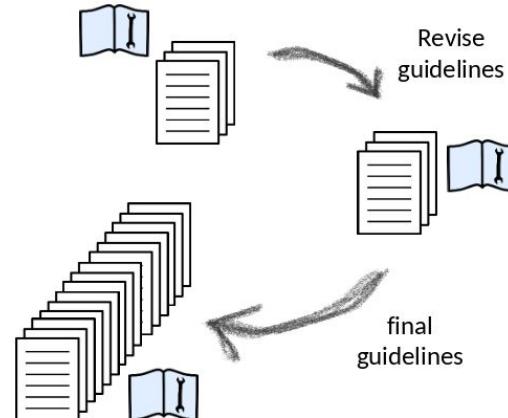


Leaked unfixed mistakes.
Keep simple or split a task

Splitting files & revising guidelines



Set aside documents for developing the guidelines



Example guidelines: single label

Movie Review Corpus (MRC, Pang&Lee 2004)

- Positive (1K) or negative (1K)
- Available in NLTK: `from nltk.corpus import movie_reviews`
- No guidelines as such: exploit numerical/star ratings
 - Five star: 1-2 stars vs 4-5 stars
 - Four star: 1 star vs 3-4 stars

This movie was all right. The special effects were good, but the plot didn't make a lot of sense. The actors were funny, which helped, but the music was really distracting.



Writing annotation guidelines

The guidelines are the instructions for annotators how to apply annotation specification (aka schema) to the data.

What to include in the guidelines?

The guidelines should answer at least:

- What is the goal of the project?
- What is each tag called and how is it used?
- What parts of the text do you want annotated, and what should be left alone?
- How will the annotation be created?

Only the info needed for annotators to correctly annotate the data



Annotated corpus is most useful when it comes with complete guidelines

Example guidelines: single label

... Our staffers will go through every publication on our Movies Publications list [...] looking for reviews for Iron Chef vs. Godzilla. For each review found, we will take the score given by the critic and convert it to a 0–100 point scale. (For those critics who do not provide a score, we'll assign a score from 0–100 based on the general impression given by the review.) [...]

—Metacritic Help and Support



How to label a neutral
review for the binary
classification?



Example guidelines: single label

... Our staffers will go through every publication on our Movies Publications list [...] looking for reviews for Iron Chef vs. Godzilla. For each review found, we will take the score given by the critic and convert it to a 0–100 point scale. (For those critics who do not provide a score, we'll assign a score from 0–100 based on the general impression given by the review.) [...]

—Metacritic Help and Support



How to label a neutral review for the binary classification?



How do you determine whether a review with no stars is Rotten or Fresh? Most critics from the Online Film Critics Society (OFCS) enter their own quotes and ratings. For critics who don't enter in their own quotes and ratings, it's basically up to the judgment of the editors. They take into account word choice, rating (if any), tone, and who the critic is in their determination of whether a review is positive or not. If an editor is not certain about a review, it is sent to another editor for a second opinion. “Wishy-washy” reviews, reviews that are really difficult to determine if the critic recommends the film or not, are usually given a Rotten because if the critic is not confident enough to give the movie even an implied recommendation, then we shouldn't either.

—RottenTomatoes Help Center

Example guidelines: single label

What is the goal of the project?

Label movie reviews as being positive or negative

What is each tag called and how is it used?

Positive or **Negative**.

Positive is assigned to positive reviews and

Negative to negative and neutral ones

What parts needs to be annotated & what should be left alone?

Label entire document with a single label

How will the annotation be created?

Type the label next to the file name of the review in the spreadsheet

high-level
overview

Example guidelines: multiple labels

high-level
overview

What is the goal of the project?

- Label movie summaries with genre notations

What is each tag called and how is it used?

- 26 genre tags can be applied to each summary *as needed*

| | | | | |
|-----------|-------------|-----------|------------|---------|
| Action | Adventure | Animation | Biography | Comedy |
| Crime | Documentary | Drama | Family | Fantasy |
| Film-Noir | Game-Show | History | Horror | Music |
| Musical | Mystery | News | Reality-TV | Romance |
| Sci-Fi | Sport | Talk-Show | Thriller | War |

Western

What parts needs to be annotated & what should be left alone?

- Each label applies to the entire document

How will the annotation be created?

Example guidelines: multiple labels

What is each tag called and how is it used?

- 26 genre tags can be applied to each summary as needed



- Maximum number of labels per document?
- When to apply which tag?

Example guidelines: multiple labels

What is each tag called and how is it used?

- 26 genre tags can be applied to each summary as needed



Tend to be
more violent

| | |
|-----------|-------------|
| Action | Adventure |
| Crime | Documentary |
| Film-Noir | Game-Show |
| Musical | Mystery |
| Sci-Fi | Sport |
| Western | |

Animation

Biography

Comedy

Fantasy

Music

Romance

War

Generally require the protagonist to go on some journey to a new place or situation

- Maximum number of labels per document?
- When to apply which tag?



Adventure

Action



Adventure

Action



Adventure

Romance

Example guidelines: multiple labels

Not all genres describe the same aspect:

| | | | | |
|-----------|-------------|-----------|------------|---------|
| Action | Adventure | Animation | Biography | Comedy |
| Crime | Documentary | Drama | Family | Fantasy |
| Film-Noir | Game-Show | History | Horror | Music |
| Musical | Mystery | News | Reality-TV | Romance |
| Sci-Fi | Sport | Talk-Show | Thriller | War |
| Western | | | | |

Characteristics
of movie events

Movie setting

Production
circumstances

Guidelines: extent annotation

Extent aspect brings several considerations:

- Neymar Jr., Mr. Holmes, Dr. Watson
- The Netherlands, The Hague
- Frank and Ronald de Boer
- Elon Musk, a CEO of SpaceX
- The Groningen City Hall
- O’Malley’s Bar & Grill

What is the scope
of each tag?



Guidelines with two parts: definition of tags & tricky cases

Possible several tags per named entity: writer & director



Defining scope of tags has a great impact on annotator agreement

Guidelines: link tags

In *Love, Actually*, writer/director **Richard Curtis** weaves a convoluted tale about characters and their relationships. Of particular note is **Liam Neeson** (*Schindler's List*, *Star Wars*) as **Daniel**, a man struggling to deal with the death of his **wife** and the relationship with his young stepson, **Sam** (Thomas Sangster). **Emma Thompson** (*Sense and Sensibility*, *Henry V*) shines as a **middle-aged housewife** whose marriage with her **husband** (played by Alan Rickman) is under siege by a **beautiful secretary**. While this movie does have its purely comedic moments (primarily presented by **Bill Nighy** as out-of-date rock star **Billy Mack**), this movie avoids the more in-your-face comedy that **Curtis** has presented before as a writer for *Blackadder* and *Mr. Bean*, presenting instead a remarkable, gently humorous insight into what love, actually, is.

tags: *films*, **actors/writers/directors**, characters

Guidelines: link tags

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tags: **films, actors/writers/directors, characters**

Guidelines: recap

All types of tasks:

- How to annotate & how not to annotate
- Definition of tags & tricky cases

Classification (with multiple labels):

- Max. number of tags per document
- Grouping the tags according to types

Extent annotation:

- Where the scope of each tag starts & ends

Link tagging:

- What are connected & when should a link created?



Cutting edge:
*real annotation &
guidelines*

Vaccination Attitudes



SMS @sarmanley

Same...Watched my boy slip into Autism after his pediatrician gave him MMR, Hep A & Varicella. CDC no longer recommends combining MMR w/any others...so I could have done w/o all the GASLIGHTING.
#VaccineSideEffects #vaccineinjured
#pfizerdocuments

CassandraSmith @CassieSmith789 · Apr 28
I watched my child because I trusted my pediatrician. We traded temporary infections for permanent disabilities. And nobody is held accountable! I'm the one who pays the medical bills, I'm the one who deals with the disorders, not the dr. He's retired on his yacht. 🙄🙄🙄

vaccine inserts
proof vaccines cause permanent disabilities
parent sharing their child's vaccine injury story
pro- vaxxer
doctors saying vaccines harm
their child having a vaccine reaction
proof vaccines kill

SMS @sarmanley

I'd like to remain in the control group. Unvaccinated sperm is the next Bitcoin. #vaccineinjuryisreal

Oma Vaxxi's Wappiehoekje #ikdoewelmee @wappiehoekje

Vandaag worden er wappiedemonstraties in Amsterdam en Maastricht gehouden. Nu de coronamaatregelen verdwenen zijn gaan de demonstratieverslaafde wappies o.a. demonstreren tegen 'de great reset' en 'het totalitaire systeem'.
Translate Tweet

DE GROOTSTE MARS VAN DE MENSELIJKE VERBINDING
"IT AINT RIGHT" PROTEST
MAY 1ST 2022 AMSTERDAM
HET KLOPT NIET! ASSEMBLY 18:00 RETURN 19:00
NO GREEN PASSPORT NO GREAT RESET NO QR SOCIETY
ROUTE: Geusselt-Gouvernement Geusselt

GROOT PROTEST LIMBURG
MAASTRICHT
GOVERNEYMENT, WE KOMEN ERAAN!
VERZAMELEN @ DE GEUSSLER
13:00 UUR
OP EIGEN INITIATIEF
Route: Geusselt-Gouvernement Geusselt

6:14 AM · May 1, 2022 · Twitter for Android

Oma Vaxxi's Wappieh... @wappiehoekje Follow

Lief voor aardige mensen, soms een beetje vals tegen virusooligans, neonazi's en wappies.

VU Vaccination Corpus (Morante et al. 2020)

Annotating Perspectives on Vaccination

Roser Morante, Chantal van Son, Isa Maks, Piek Vossen

CLTL Lab, Vrije Universiteit Amsterdam

De Boelelaan 1105, 1081 HV Amsterdam, The Netherlands
{r.morantevallejo, c.m.van.son, isa.maks, piek.vossen}@vu.nl

Abstract

In this paper we present the Vaccination Corpus, a corpus of texts related to the online vaccination debate that has been annotated with three layers of information about perspectives: attribution, claims and opinions. Additionally, events related to the vaccination debate are also annotated. The corpus contains 294 documents from the Internet which reflect different views on vaccinations. It has been compiled to study the language of online debates, with the final goal of experimenting with methodologies to extract and contrast perspectives within the vaccination debate.

Keywords: perspectives, attribution, opinions, claims, vaccination debate.

<https://aclanthology.org/2020.lrec-1.611/>
<https://github.com/cltl/VaccinationCorpus>

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Annotation layers:

(0) *Events* – things that *happened* that are relevant for annotation debates

78. A group of German-speaking parents in northern Italy are so angry about a new requirement to get their children vaccinated that they plan to seek asylum in nearby Austria.
79. The 130 families live in Alto Adige - also known as South Tyrol - a region that was part of Austria before 1919.
80. Last month the Italian government ruled that children must be vaccinated against 12 common illnesses before they can enrol for state-run schools. Cases of measles have risen in Italy.
81. The highly-contagious sickness is fatal in some cases. Some other European countries, including France and Romania, have also seen more measles cases this year.
82. In some parts of Europe, including Italy, vaccination rates have dropped below those recommended by the World Health Organization (WHO).
83. The leader of the South Tyrol protest, Reinholt Holzer, said the group had sent protest messages to Italian President Sergio Mattarella, Austrian President Alexander Van der Bellen, and the UN Human Rights Council in Geneva.
84. "We won't allow our children to be poisoned. Asylum is claimed not just by people fleeing war, but also by people whose rights are being violated," said Mr Holzer, quoted by Austria's Der Standard daily.

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Annotation layers:

(1) *Attributions* – attributing an *attitude* to someone

2.5.12 View

71. My view today is that there likely have been some cases of measles caused by vaccines
SOURCE: my
CUE: view
CONTENT: that there likely have been some cases of measles caused by vaccines

2.5.13 Want

72. Marc wants to go home.
SOURCE: Marc
CUE: wants
CONTENT: to go home
73. He wants an ice-cream.
No AR because the object of *want* is a material object.

VU Vaccination Corpus (Morante et al. 2020)

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Keywords: perspectives, attribution, opinions, claims, vaccination debate.

Annotation layers:

(2) *Claims* – the author expresses a *stance* on vaccination

B Example of annotated file

The recent measles outbreak in Disneyland has caused quite a stir, as the disease was thought to be nearly eradicated in the US. MSM outlets are fear mongering the public into getting the MMR shot which they claim will protect you from the disease <CLAIM>. What they are not telling is that people who have received the CDC recommended doses of vaccine are still catching and passing on measles to others <CLAIM>. And the cat calls of safe and effective spewed out by the minions of big pharma are also a farce <CLAIM>. Infowars.com reporter Rob Dew reads straight off the MMR vaccine insert which lists the following side effects: measles, measles like rash, diabetes, encephalitis, GuillainBarr syndrome, pneumonia and even death. On top of that, a whistleblower lawsuit came to light late last year that proves MERK executives where hiding the fact that the vaccine was not 95% effective as they claim <CLAIM>. Please do your own research and work your natural immune system which in the end is the only thing that will protect you <CLAIM>.

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Keywords: perspectives, attribution, opinions, claims, vaccination debate.

Annotation layers:

- (3) *Opinion* – the author expresses an opinion about a *person*

35. [A leading conspiracy theorist]_{expression_neg} is [Andrew Wakefield]_{target}
36. [The establishment media]_{target} is [desperately pushing the myth]_{expression_neg} that vaccines are completely safe and effective
37. [Offit]_{target} has [made millions]_{expression_neg} inventing a vaccine for Merck

Guidelines

- How to explain annotation concepts?
- How to make use of previous work?
- How to deal with subjectivity?



| | | |
|-----------|--|-----------|
| 2 | of 24 | |
| 2 | Vaccination-Event-annotation-guideli... | |
| 60.3% | 60.3% ▾ | |
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Guidelines

- How to explain annotation concepts?
- How to make use of previous work?
- How to deal with subjectivity?

1 Event: A Definition

TimeML (and ISO-TimeML) defines events as “situations that happen or occur” (Pustejovsky et al., 2006). In TimeML, *event* is used as a cover term for describing both dynamic, static, durative and non-durative situations. States are additionally defined as “circumstances in which something obtains or holds true” (*ibid.*).

In RED an event is defined as “any occurrence, action, process or event state which deserves a place upon a timeline, and could have any syntactic realization”. This latter definition, based on semantic considerations and independent of syntactic considerations, will be adopted in the remainder of the guidelines as our definition of what is an event.

However, you should bear in mind, that, as described in Section 9, for this task we only annotate events that are related to the vaccination debate.

Guidelines

- How to explain annotation concepts?
- How to make use of previous work?
- How to deal with subjectivity?

2.1 What is an event?

Following the RED guidelines, the first task is to distinguish between real event mentions and mentions which encode relationships (e.g. causal or aspectual, among others) or correspond to purely grammatical elements (e.g. auxiliaries, modals, light verbs, and support verbs, among others). The key questions to be asked are:

- Is a certain group of lexical items or a single one expressing something that is happening, happened, will or may happen?
- Is a certain group of lexical items or a single one expressing a change of state, a process or of a set of processes, a situation, or a temporally bounded property?

In the following (and the rest of) examples, events are underlined:

1. People are buzzing about the release of the new iPhone.
2. I might come with you if you don't mind.
3. You seem to be happy.
4. The earthquake hit the coast
5. The party started at 10 o'clock.

Guidelines

- How to explain annotation concepts?
- How to make use of previous work?
- How to deal with subjectivity?

4 Events realized by VERBS

All verbal predicates, including those that denote a state, give rise to events. Both finite and non-finite verb forms are annotated. The event token corresponds to the verbal head of the VP. Auxiliaries (both temporal and modal) are excluded from the tag extent;

13. People are buzzing about the release of the new iPhone.
14. I might come with you if you don't mind.

5 Events realized by NOUNS

Events realized by nouns can correspond to:

- nominalizations;
- event nouns;
- contextual event readings or implicit events.

With “contextual event reading” of nouns we refer to a set of well known semantic phenomena, such as type-coercion (e.g. *beginning a book*), metonymy (e.g. *The bomb ended the manifestation*) and similar, which elicit an eventive reading of a noun which would normally refer to an entity (either concrete or abstract) or imply the occurrence of an event.

19. The flight was scheduled at 08.00 p.m.
20. The meeting lasted 3 hours.
21. A panic attack can be dangerous.
22. An allergic reaction can be dangerous.
23. A bomb disrupted the parade.

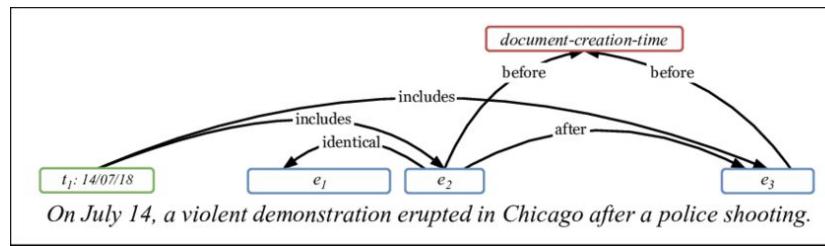
Guidelines

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These guidelines are based on the TimeML Annotation Guidelines (Pustejovsky et al., 2006), the News-Reader Annotation Guidelines (Tonelli et al., 2014), the ECB+ Annotation Guidelines (Cybulska and Vossen, 2014), the ISO-TimeML Framework (ISO, 2008), and the Richer Event Description (RED) Guidelines v1.7¹ (Styler et al., 2014). The guidelines apply to English and at document and mention levels.



Guidelines

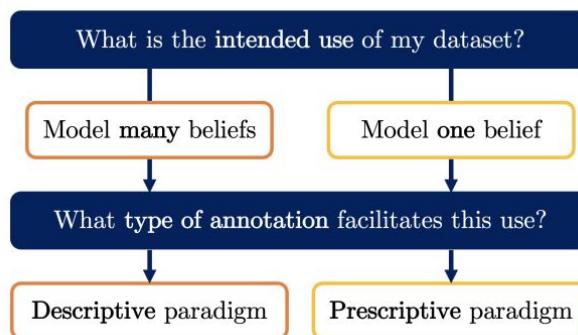
- How to explain annotation concepts?
- How to make use of previous work?
- **How to deal with subjectivity?**

As with most annotations of subjective content (Reidsma and op den Akker, 2008), our guidelines are not specified in extreme detail and the coding relies on the often subjective interpretation of the annotators. There are no fixed

Guidelines

- How to explain annotation concepts?
- How to make use of previous work?
- **How to deal with subjectivity?**
- **Prescriptive approach:**
 - annotations should reflect *your beliefs*
 - annotators try to *approximate* these beliefs as closely as possible, putting aside their own beliefs

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Guidelines

- How to explain annotation concepts?
- How to make use of previous work?
- **How to deal with subjectivity?**
- **Prescriptive approach**
- **Descriptive approach:**
 - you are interested in *annotators' beliefs*
 - annotators are given no/few rules, you are interested in *analyzing disagreement*

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