Corpus Linguistics: Solutions for Annotation

Karën Fort
karen.fort@inist.fr

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Introduction

Annotation Tools

Pre-annotation

Training and Methodology

Crowdsourcing

Conclusion
Solutions
Solutions

- Annotation Tools
- Tag Dictionaries / Pre-annotation / Active Learning
- Crowdsourcing (AMT and serious games)
- Training / Documentation / Methodology
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**Why?**
Why using tools?

- To ease the **editing** of annotations, in particular in the case of relations
- To limit the number of items to **keep in mind** [Dandapat et al., 2009]
- To **constraint** the annotation, therefore limiting the errors [de la Clergerie, 2008, Mikulová and Štěpánek, 2009]
- To **hide** a layer when annotating another one [Widlöcher and Mathet, 2009]
- To **ease the access to the context**, even large [Widlöcher and Mathet, 2009]
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Existing tools

+/- Glozz, GATE, but also MMAX2, Knowtator, Cadixe, Callisto, etc.

++ gain in time and quality

⇒ (too) many tools, for schemes or for specific campaign, not for annotators!
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Can XML editors be considered as annotation tools?
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Tag Dictionaries

Allow to:

1. store the categories attached by annotators to one token
2. propose those categories when the same token is met

⇒ Very simple and quite effective (see [Carmen et al., 2010]), but the more is annotated, the more effective the method is.
Correcting automatic pre-annotations

++ Significative gain in time and quality, at least for POS tagging and bracketing (Penn Treebank [Marcus et al., 1993], Hindi and Bangla POS tagging [Dandapat et al., 2009], English POS tagging [Fort and Sagot, 2010])

- **Biases** not always taken into account: is it the same to pre-annotate NEs and gene renaming?
- also **time consuming** if system is too bad (to be defined)
Particular case: Active Learning

- Not all the annotations are necessary to train a tool ⇒ detect annotations that are really useful to improve the final results
- Pre-annotate a corpus automatically, then ask annotators to correct, then re-annotate, etc.
  ⇒ iterative
  + allow to gain time
  - but time consuming if system is too bad (to be defined)
- on Ritel project (Human Machine Oral Dialog): above 30% of errors, it was quicker for transcriber to do it from scratch than to correct transcription
Pre-annotations issues

- Either humans concentrate on what was pre-annotated, correct pre-annotations, but do not see what is missing.
- or they concentrate on what is missing but do not correct pre-annotations.
- impossible for some types of annotation due to the lack of good quality tools (like co-reference resolvers)
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A good training of the annotators is the best solution for a fast, better quality annotation [Dandapat et al., 2009].

This should be associated with an adapted documentation with:

- a clear definition of the **application**
- a clear and detailed definition of the **categories** (always possible or even desirable?)
- meaningful **examples**
- **ambiguous categories** presented in parallel, like in the PTB documentation (see it here: ftp://ftp.cis.upenn.edu/pub/treebank/doc/tagguide.ps.gz)
Training and Documentation

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Keep in mind that annotators are **at the very heart** of the annotation campaign!
Methodology

• Compute **inter-annotator agreement** at the very beginning of the campaign, then update the Annotation Guide [Bonneau-Maynard et al., 2005].

• Compute **intra-annotator agreement** as the annotation goes, to check that annotators are coherent with themselves [Gut and Bayerl, 2004].

• This can go as far as **Agile Annotation** [Voormann and Gut, 2008, Alex et al., 2010], implying several iterations
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Crowdsourcing: Definition

**Crowdsourcing** is the act of outsourcing tasks, traditionally performed by an employee or contractor, to an undefined, large group of people or community (a crowd), through an open call.

The term “crowdsourcing“ is a portmanteau of “crowd“ and “outsourcing“, first coined by Jeff Howe in a June 2006 Wired magazine article “The Rise of Crowdsourcing“. Howe explains that because technological advances have allowed for cheap consumer electronics, the gap between professionals and amateurs has been diminished. Companies are then able to take advantage of the talent of the public, and Howe states that ”It’s not outsourcing; it’s crowdsourcing.“

(Wikipedia, consulted on the 2nd of Dec., 2010)
Different types of crowdsourcing

Developed with Web 2.0:

- **crowdvoting**: using social networks to vote on an issue, a product, etc (social bookmarking)
- **crowdcreation**: idea competitions
- **crowdwisdom**: answering questions (Yahoo! questions)
- **crowdfunding** (for art projects, political campaigns, etc)

... through social networks, ”serious“ games and microworking.
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... through social networks, "**serious**“ games and **microworking**.
Crowdsourcing: Serious Games

- ESP game: 13,500 users labelled 1.3M images in 3 months! [von Ahn, 2006]
- JeuxDeMots [Lafourcade, 2007]
- PhraseDetectives [Chamberlain et al., 2008]
Crowdsourcing: Microworking

Amazon Mechanical Turk (AMT): ACL Anthology (Nov. 5, 2010), 86 art. (incl. NAACL-HLT 2010 Workshop)

Evolution of MTurk usage in NLP [Fort et al., 2011]
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**MTurk: Gold Mine or Coal Mine? [Fort et al., 2011]**

**Presentation, LTC 2011 [Adda et al., 2011]**
Crowdsourcing: pros and cons

+ using the users’ work through Web collaboration (access to more people)
  - who’s working? (native language? Education?)
+ cheap (if not free)
  - from games to hobby to... sweatshop!
+ quick
+ good quality [Snow et al., 2008]...
  - ... if annotation is easy!
  - and if people do not cheat!
• solutions
• pros and cons


Tag dictionaries accelerate manual annotation.


In Proceedings of the third ACL Linguistic Annotation Workshop, Singapour.

de la Clergerie, E. V. (2008).
A Collaborative Infrastructure for Handling Syntactic Annotations.
In First International Workshop on Automated Syntactic Annotations for interoperable Language Resources, Hong-Kong.


Making people play for lexical acquisition.
In Proc. SNLP 2007, 7th Symposium on Natural Language Processing, Pattaya, Thailand.

In Actes de la Semaine de la Connaissance 2006, Nantes, France.


