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Create and manage your own treebank. Workshop in Konstanz.

Corpus Annotation

What is a parser?

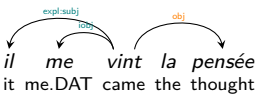
Program performing automatic syntactic analysis

- Symbolic parsers
- Statistical parsers
- Nowadays mostly with RNN

  comprehensive reading: Jurafsky D. and Martin J. H., *Speech and Language Processing*, 3rd ed. draft.

Evaluation:

- UPOS: accuracy of the Part-of-speech tags (UD tagset)
- UAS: Unlabeled Attachment Score
- **LAS: Labeled Attachment Score**
- Performed over:
  - dev: development set (c. 10% of the data)
  - test: test set (c. 10% of the data)



the thought came to me (*L'École des femmes*)

Online parsing with UDPipe

Some parsers are available as **webservices**.

ex. UDPipe [Straka and Straková, 2020]

- **Functions**: tagging, lemmatization, parsing
- **Models**: trained on UD treebanks
- **Input options**: plain text, tokenized text and CoNLL-U
- **Output options**: text, table, trees

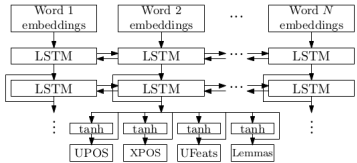


Figure 2: Tagger and lemmatizer model.

Abbildung: UDPipe's architecture [Straka, 2018]

Can ChatGPT annotate my data?

Yes...

represented in CoNLL-U format:

plaintext — Copier le code

```
# text = To proceed then to my Propositions, I shall begin with this.
1   To   to   PART   _   _   2   mark   _   _
2   proceed proceed VERB   _   _   10  advcl  _   _
3   then   then   ADV _   _   2   advmod  _   _
4   to   to   ADP _   _   6   case   _   _
5   my   my   DET _   _   6   det _   _
6   Propositions   Propositions   NOUN   _   _   2   obl _   _
7   ,   ,   PUNCT   _   _   10  punct  _   _
8   I   I   PRON   _   _   10  nsubj  _   _
9   shall   shall   AUX _   _   10  aux _   _
10  begin   begin   VERB   _   _   0   root   _   _
11  with   with   ADP _   _   12  case   _   _
12  this   this   PRON   _   _   10  obl _   _
```

Abbildung: Parsing of one sentence with *ChatGPT* after 4 attempts

But...

- it is **time-consuming**
- and **prone to bugs**.

Local parsing with HOPS

HOPS: *Honest Parser of Sentences* [Grobol and Crabbé, 2021]

- easy to install and use
- proved useful on historical data [Grobol et al., 2022]

Model	UPOS	UAS	LAS
[Straka et al., 2019]	96.26	91.83	86.75
mBERT	96.19	92.03	87.52
BERTrade-petit	96.60	92.20	87.95
BERTrade-mBERT	97.11	93.86	90.37
BERTrade-FlauBERT	97.15	93.96	90.57
BERTrade-CamemBERT	97.29	94.36	90.90

Tabelle: Results on SRCMF test

Installing a parser

+ Train your own models

– Requires resources (machine + time)

NLP teams are often eager to learn about your resources...

Manual Annotation

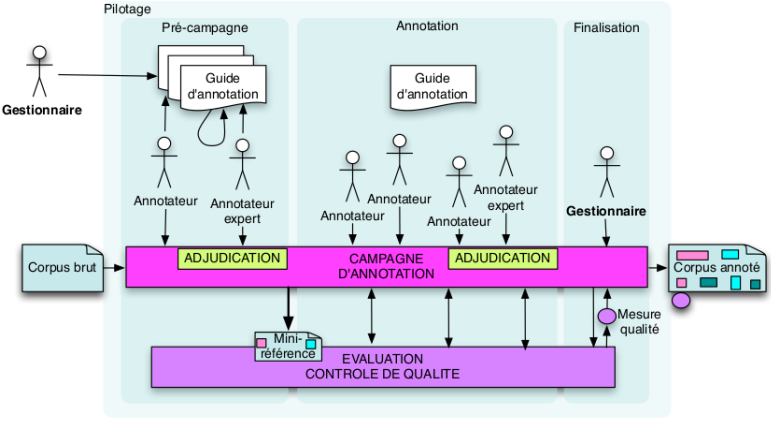


Abbildung: Annotation campaign, K. Fort, *Master's course in Sorbonne Université*

Here are other recommendations: [Grouin et al., 2011, Fort et al., 2012a, Fort et al., 2012b, Fort, 2016]

HOPS demo

Train your model:

- Select your data (train/dev/test)
  in the right **data format**
- Select your word embeddings model and choose configuration
  List from the *transformers* library (*HuggingFace*)
  If no such model available for your language:
  - training without (noBERT config)
  - use a multilingual model
  - create your own :-)
- Experiments:
  - Do several trainings (3-5) to start at random in the data (random seed)
  - Play with the parameters (ex. the number of epochs)
- Let's take a quick look into a server

Corpus Management

2

Get to know the data

Uploading your treebanks on Arborator-GREW:

- Google or GitHub account
- **Correct CoNLL-U files**

Let's try! Select one of the options below:

- Middle French repository

  Grandes Chroniques de France, 1375-1380.
  Gold annotation from UD_Middle_French-PROFITEROLE v. 2.14
  parsed with UDPipe + Old French model and HOPS + SRCMF-Flaubert model
  (no specific model for Middle French... yet)

- Early Modern English repository

  Robert Boyle, *The Sceptical Chymist*, 1661. Source: Wikisource
  Annotated with an English HOPS model (not state-of-the-art)

- Upload your own treebank

What do you think of the quality of the annotation? How should we measure it?

Exploit data

With GREW online/local softwares, you can...

- **visualize** and **share** your data (Arborator-GREW),
- **edit** your treebank with GREW-web
  and **retrain the parser** directly on the platform

Here are some projects we did:

- Enrich a lexicon with verb valency frames using GREW: GitHub repository
- Enrich a lexicon with semantic types for noun
  temporal nouns used as modifiers without a preposition, ex. *that day, last week...*
- **Error mining** for PROFITEROLE

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