Advanced programming in Python

Lecture 12: Python in Natural Language Processing

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Who

- PhD student in Natural Language Processing (or Computational Linguistics, or Language Technology...) at Språkbanken Text, GU
- particularly interested in:
  - computational syntax
  - Computer-Assisted Language Learning

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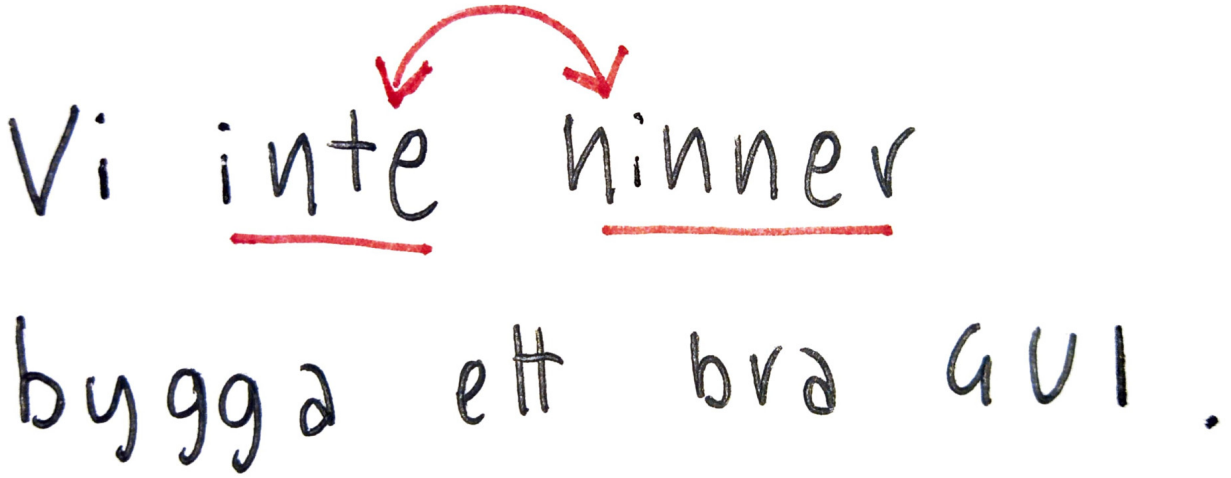
  - Computer-Assisted Language Learning
  - Swedish

What

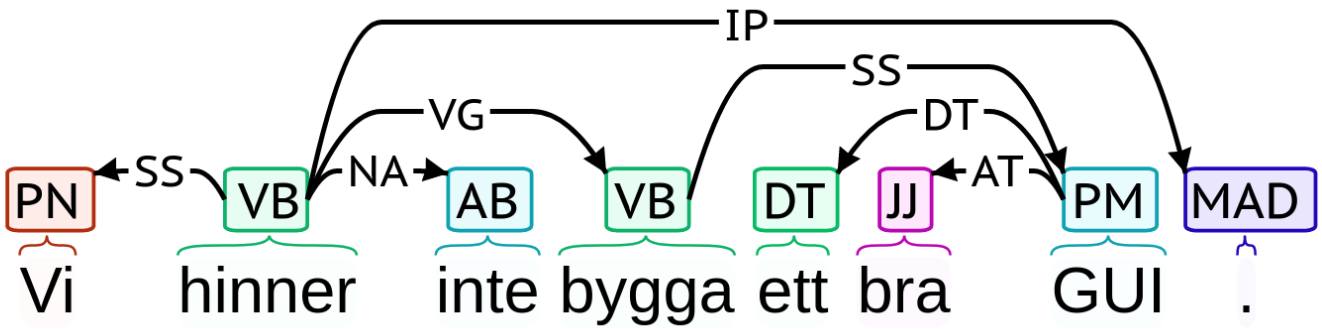
We are going to build a mini Python application to practice Swedish syntax (adverb placement), but. . .



"We don't have time to build a proper GUI"

How

With **Part-Of-Speech annotation** and **dependency parsing**:



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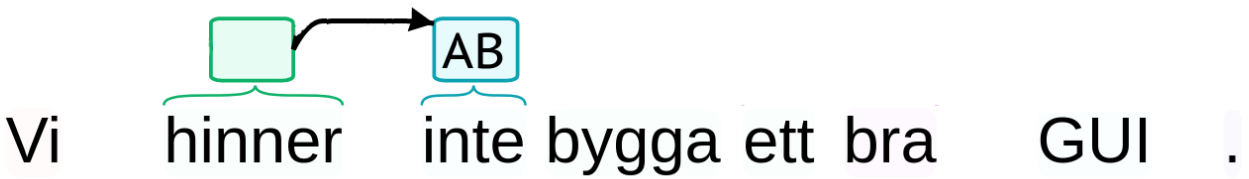

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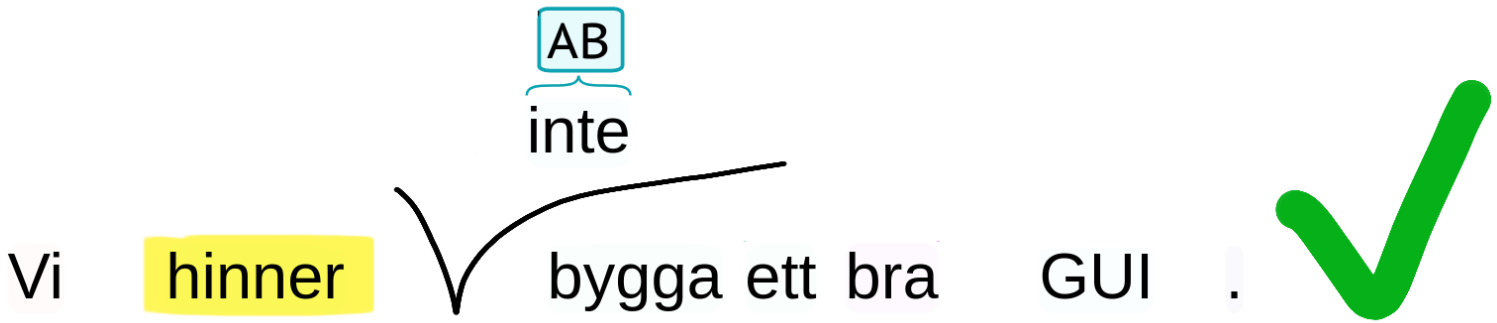

Libraries

- **python-korp**, a wrapper for the Korp API, to retrieve linguistically pre-annotated sentences from large Swedish corpora
- **Spacy**, a widely used NLP library, to annotate our own sentences

Korp

A basic application with Korp

1. get a random concordance containing an adverb
2. generate a question:
   - 2.1 set aside the adverb
   - 2.2 highlight its head
3. ask the user to input a 3+ word-long sequence *including* the adverb
4. check whether the sequence is included in the original sentence

Spacy

Extending the application

If the path to a custom input file is provided:

1. **read the file and split it into sentences** (we can assume that there is one sentence per line)
2. **parse all sentences with Spacy**
3. get a random concordance containing an adverb (**new query and matching function!**)
4. **transform it to a korp-like dict with `to_korp_dict`**

Otherwise:

1. get a random Korp concordance containing an adverb

Then, generate a question and check the user answer as usual.

In conclusion

2h-prototype of a simple language learning app:

- code: `github.com/harisont/advpy_nlp`
- possible extensions:
  - GUI
  - other POS/dependency relations (customizable queries)
  - other languages (with Universal Dependencies)
  - ...

To learn more

- Korp user manual: `spraakbanken.gu.se/en/tools/korp/user-manual`
- Official Spacy website: `spacy.io`
- the exercise class tomorrow
- Aarne's Computational Syntax course