

The ABC of Computational Text Analysis

#10 NLP WITH PYTHON

Alex Flückiger

Faculty of Humanities and Social Sciences
University of Lucerne

May 12, 2023

Recap last Lecture

introduce Python 

- working with VS Code Editor
- learning programming concepts & syntax
 - data types, loops, indexing...

Outline

- get the organizational stuff done
 - evaluation, mini-project, assignment #3
- let's do serious NLP! 
- code interactively
 - interrupt, ask, and complement

Organizational



Course Evaluation

Tell me...

Please follow the link in the email

- received on 9 May 2023 (or similar)
- by the University of Lucerne, Faculty of Humanities and Social Sciences

Thanks for any constructive feedback,
be it sweet or sour! 

Assignment #3



- get/submit via OLAT
 - starting tomorrow
 - deadline 20 May 2023, 23:59
- use the **OLAT** forum
 - subscribe to get notifications
- ask friends for support, not solutions

Requirements of Mini-Project

present project on 2 June 2023

- analyze any collection of documents
 - compare historically
 - compare between actors
 - apply quantitative measures + interpretation
 - executable script
 - multiple documents
 - form groups of 2-4 people
- !** share your project idea [here](#) by 19 May 2023

Optional Seminar Paper

- writing a seminar paper (6 ECTS)
- get in touch to discuss your idea



A Primer on Old School NLP

What is a Word?

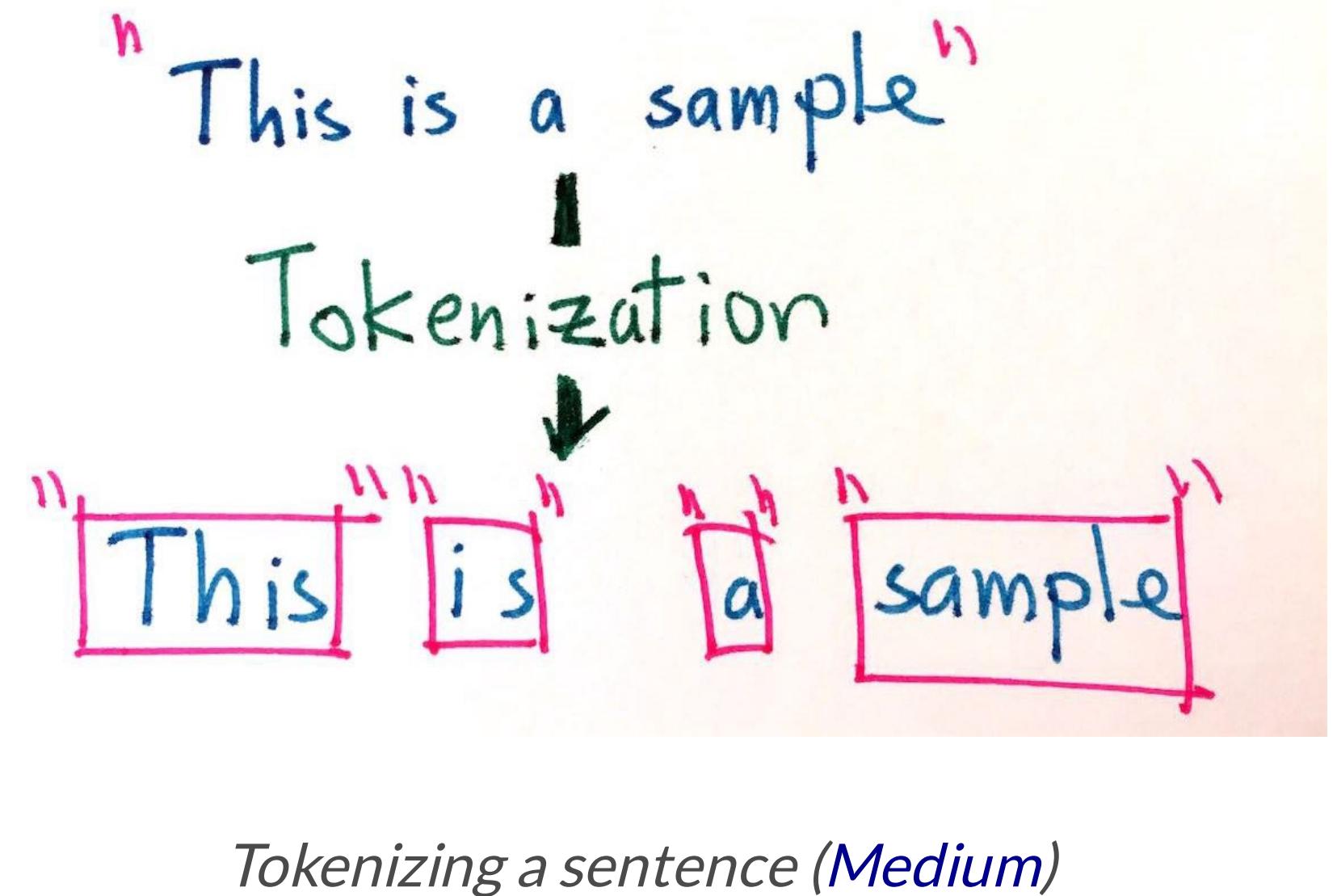
- words ~ segments between whitespace
- yet, there are ...

contractions: U.S., don't

collocations: New York

Token

- token ~ computational unit
 - representation of words
- lemma ~ base form of a word
 - texts → text
 - goes → go
- stop words ~ functional words
 - lacking deeper meaning
 - the, a, on, and ...



Let's tokenize this sentence! Isn't it easy? 😎

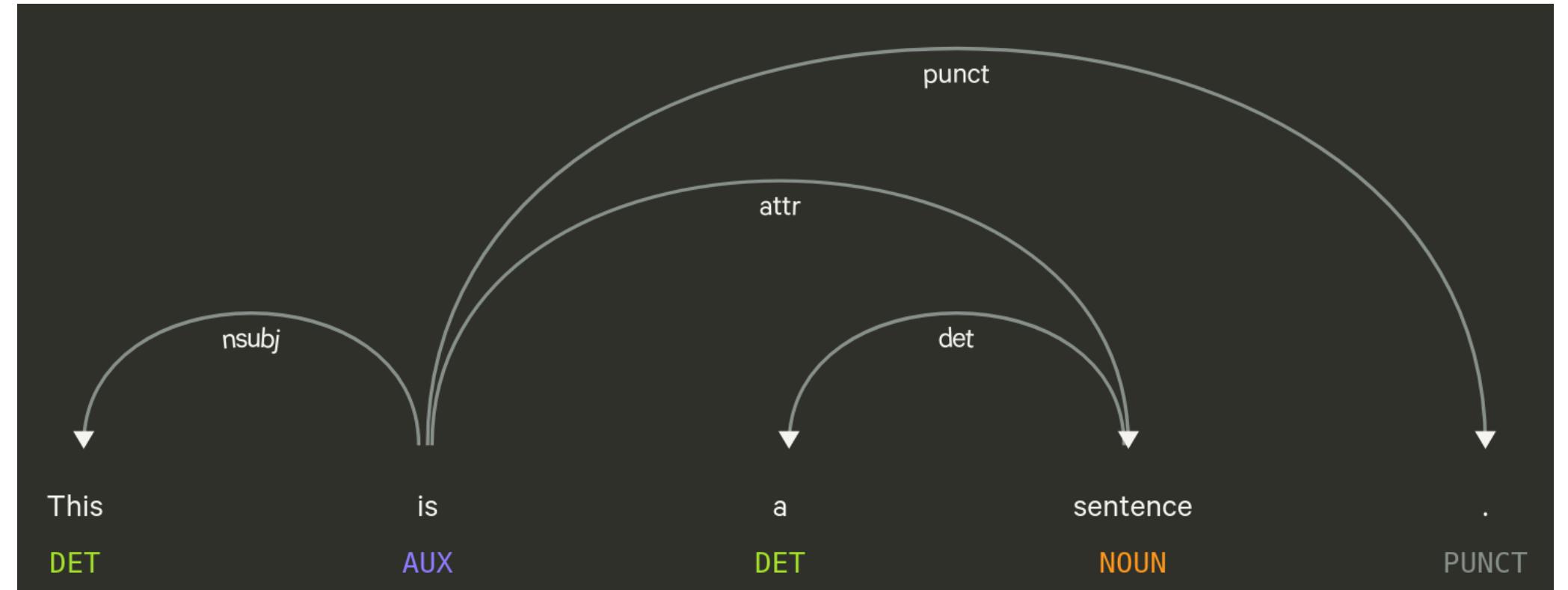
Common Processing Steps in NLP

1. Tokenizing

segmenting text into words,
punctuations etc.

2. Tagging part-of-speech (POS)

assigning word types (e.g. verb,
noun)



3. Parsing

describing syntactic relations

4. Named Entity Recognition (NER)

organizations, persons, locations,
time etc.

 Catch up on NLP with Jurafsky
and Martin (forthcoming)

Modules/Packages

No programming from scratch 

- packages provide specific functionalities
- packages need to be installed first

NLP Packages

- **spaCy**
industrial-strength Natural Language Processing (NLP)
- **textaCy**
NLP, before and after spaCy
- **scattertext**
beautiful visualizations of how language differs across corpora

Deep Dive into NLP for Social Science

- check [code](#) on GitHub
- run code on Binder [!\[\]\(73b059f51b6349c47bd4937a81c667dc_img.jpg\) launch binder](#)

Resources

tutorials on spaCy

- official spaCy 101
- official online course spaCy
- Hitchhiker's Guide to NLP in spaCy



Questions?

References

Jurafsky, Dan, and James H. Martin. forthcoming. *Speech and Language Processing*. 3rd (Draft of December 29, 2021). London: Prentice Hall. <https://web.stanford.edu/~jurafsky/slp3/>.