Current Topics in Digital Philology
The openLegislature project

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Outline

1. Introduction
   - Corpus
   - Questions
2. Methods
3. Results
4. Outlook
   - next Steps
5. Take a chance on us!

Informations

Plenary Protocols from Bundestag

- stenographic reports in PDF
- open to the public
- siehe [3]

- size of corpus circa 10GB →more than 3900 PDF

Questions to the information in the corpus

Statistic:

- How many speakers are in one legislative period/total?
- How many speeches from one party/speaker?

Keyword-search:

- Which speaker spoke to a special topic?

Why this questions?

We want more transparency! The answers are there, but too difficult to reach for all other people. That will be changed!

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Methods

Preprocessing:

- stop word filter
- lower case transformation
- word count for SLDA
- tf-idf for log-likelihood
- cooccurrences per speaker

Methods

Algorithms:

- Log-likelihood
- Topic Modell / SLDA

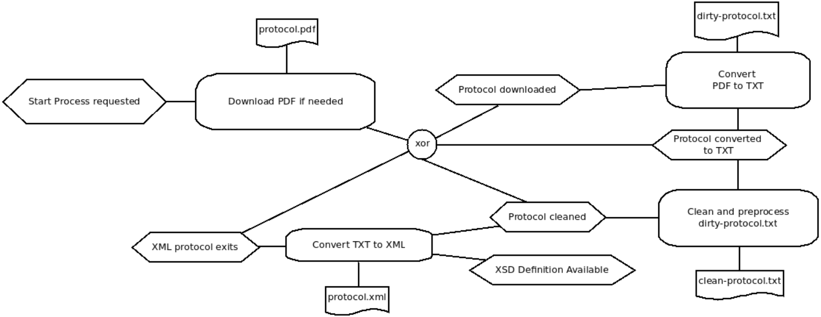
"Latent Dirichlet allocation (LDA) is a generative probabilistic model of a corpus. The basic idea is that documents are represented as random mixtures over latent topics, where each topic is characterized by a distribution over words.", siehe [2]
In supervised latent Dirichlet allocation (sLDA), we add to LDA a response variable associated with each document, [1]

SLDA Methods

1. single step approach
    - create single dataset for an election period
    - calculate top words for each speaker
2. two step approach
    - create dataset for each protocol
    - calculate top words for each speaker
    - merge results for an election period
    - calculate top words for each speaker

Architectural process for data extraction and preparation

- Usage of Listener Patterns [5]
- Usage of Github-Library Async [4] for easy creation of concurrent process chains



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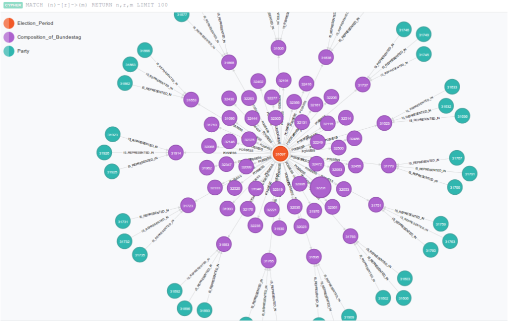
temporary results

- unstructured Textfiles avaiable (PDF / TXT) for all election periods
- semi-structured XML files processed from PDF
- Metadatabase (NEO4J) with data of all election periods
- XPath query's on XML-Files



CYPHER MATCH (n)-[r]->(m) RETURN n,r,m LIMIT 100

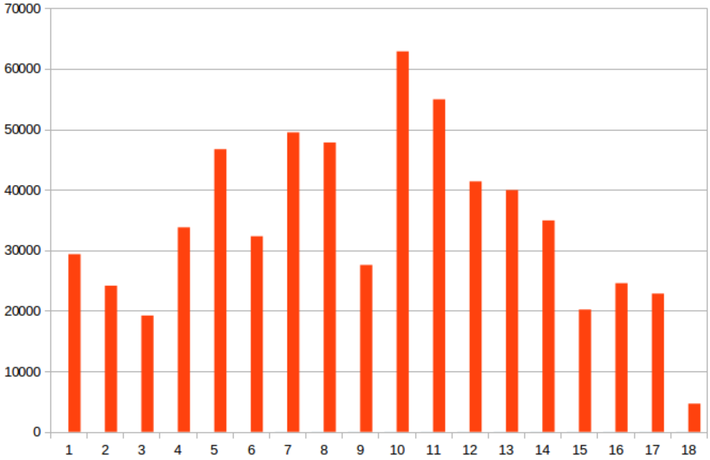
temporary results 2

- NoSQL Database:
  - all speeches
  - Speaker with all Speeches
  - appearance of words by speech
  - Speakerstatistics over all election periods
  - Partystatistics over all election periods
- website for browsing corpusdata/-statistics with visualisations
- imput files for slda (arff-files) generated (for 18th election period)
- slda output: significant words for each speaker of the 18th election period

Statistics

- 18 election periods
- 7004 speaker
- 679910 speeches
- 39 partys
- But: data not as clean as possible
  - typing errors: e.g. "CSU/CSU", "Pawelcyzk" "Pawelczyk" "Pawelzcyk"
  - parsing problems

Statistics 2: Speeches pro election period



significant words for speeches

18th election period, second session: Thomas Oppermann

- 1. staat
- 2. verhandeln
- 3. snowden
- 4. nsa
- 5. praxis
- 6. geheimdienste
- 7. ausspioniert
- 8. hören
- 9. möglichkeit
- 10. schutz

significant words for speeches 2

18th election period, third session: Oskar Lafontaine

- 1. waffenexporte
- 2. währung
- 3. ökonomisch
- 4. zukunftsaufgaben
- 5. währungsspekulation
- 6. übernachtungen
- 7. verteilung
- 8. waggons
- 9. zug
- 10. schneller

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What are our next tasks we need to accomplish?

- finalize our results, make them human accessable
- provide (easy) query interface for everyday users
- extend statistical webpage

Last steps until the end of the semester

- reprocess xml parsing
- finish result visualization
- connect our data with the meta data database (e.g. match every speeker to gouvernment / opposition)
- Log Likelihood on the GPU with our corpus

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Take a chance on us!

Our project could be really interessting in the following sence:

- History / Political Science
- Educational Purposes
- Parties

We would try to contact the listed stakeholder to learn more about there needs.

Also, we would like to distribute our resuls in a way that everybody can consume them. This could involve the enhancement of your current result page (namely by a query interface for keywords) or the administration of a virtual machine with our results and software artifacts to recreate them.

What does it tell about humen history and society?

- We could create deeper insights of how humens interact with each other, especially when they argue.
- We can follow and study important milestones of history (from the European Coal and Steel Community to the European Union)
- We can analyse which party and even which politian represents a specific opinion.

We think in the time of NSA and total surveillance a project like ours could contribute as a weapon against inresponsible politicians. The information about what the elected leaders actually do and say could be one step to a more enlightened society.

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