Current Topics in Digital Philology
The openLegislature project

Dan Häberlein, Peggy Lucke, J. Nathanael Philipp, Alexander Richter

Universität Leipzig

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Informations

Plenary Protocols from Bundestag

- stenographic reports in PDF
- open to the public
- siehe [2]
- 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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Methoden 1

Preprocessing:

- Lemmatizing
- ggfs. Part of Speech Analyse
- Vergleichen von N-Grammen zur Ähnlichkeitsüberprüfung
- Keine Stopwortentfernung, da dadurch Informationen verloren gehen!

Methoden 2

IR Methoden:

- Kookkurrenz auf verschiedenen Ebenen (Reden per Partei, Redner, Gesammt)
- Clustering

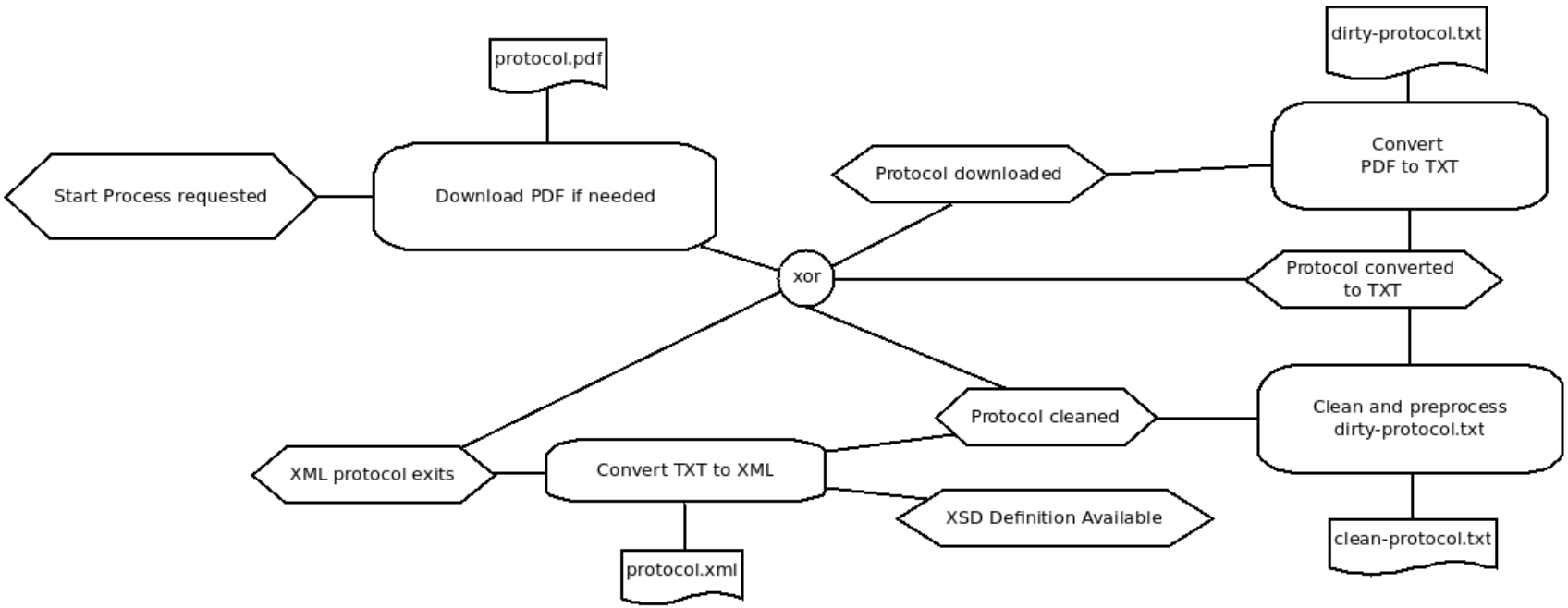
IR Algorithmen

- Ähnlichkeitsmaße berechen und vergleichen
- Topic Modell / LDA

"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 [1]

Architektur Prozess Datenextraktion und -aufbereitung

- Nutzung des Listener Patterns [4]
- Verwendung der Github-Library Async [3] zur einfachen Erstellung Nebenläufiger Prozessketten



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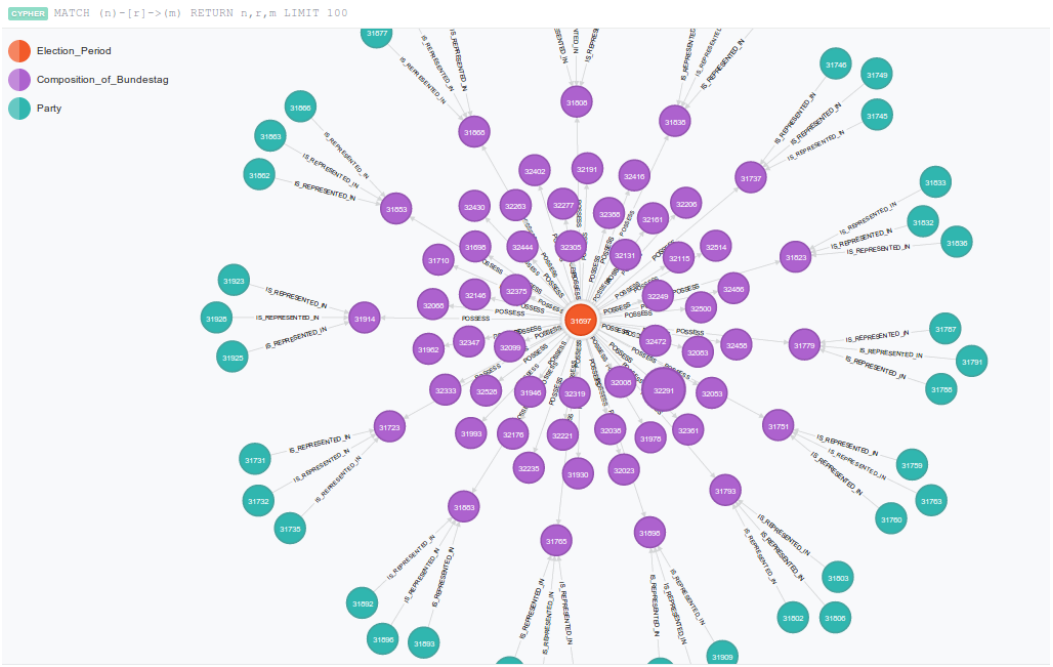
temporary results

- 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



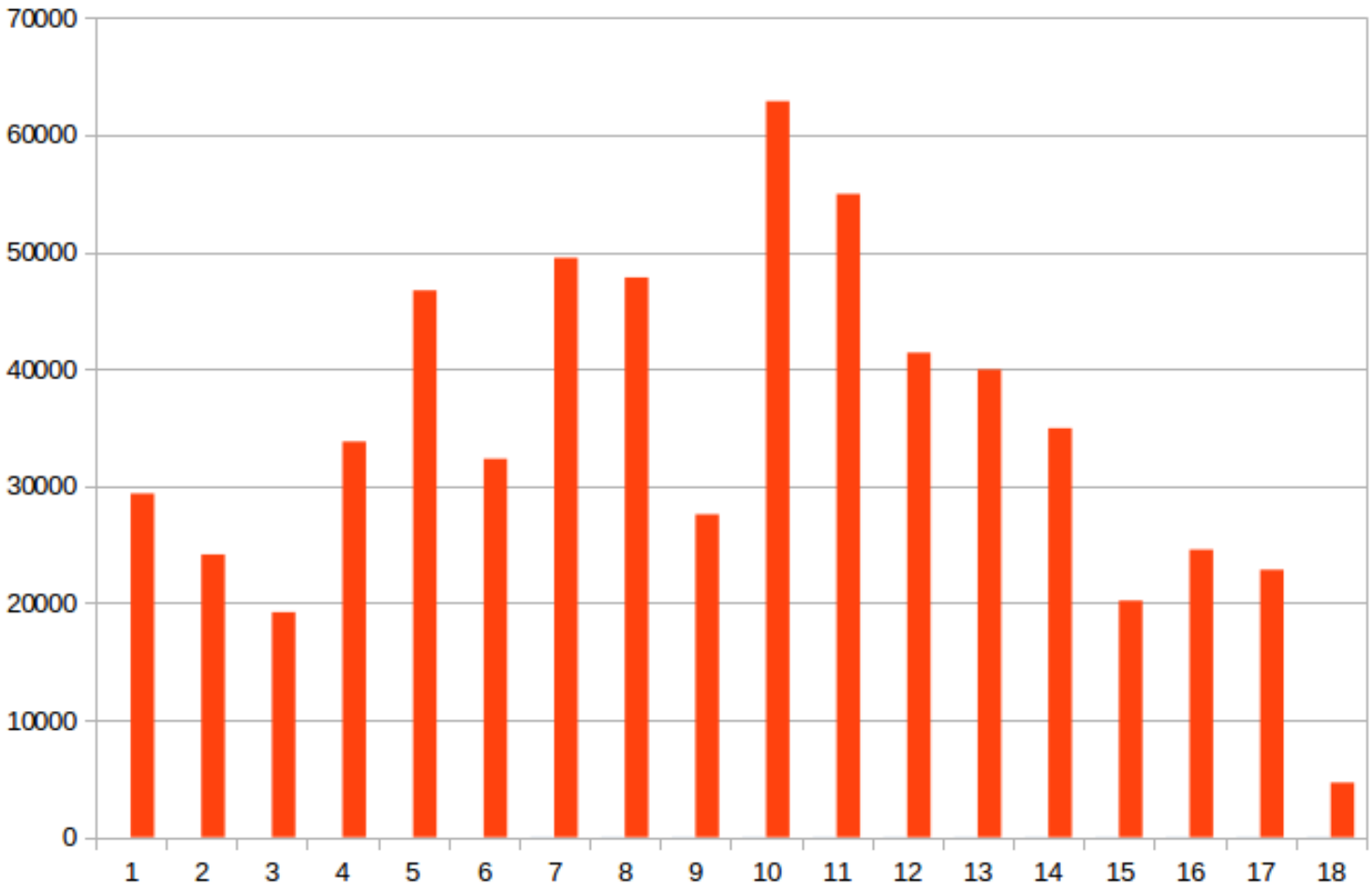
temporary results 2

- 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 speech 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", "Angelika Me rtens", ..
  - 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
- extends statistical webpage
- Provide (easy) query interface for everyday users

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.


David M Blei, Andrew Y Ng, and Michael I Jordan. "Latent dirichlet allocation". In: *the Journal of machine Learning research* 3 (2003), pp. 993–1022.


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