On the Detection of Neologism Candidates as Basis for Language Observation and Lexicographic Endeavours: the STyrLogism Project

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Overview

- Research goals
- Some definitions
- Related work
- Method
- Data
- Preliminary results
- Conclusions & outlook

Research goals

- Semi-automatic extraction of neologism candidates for the German standard variety used in South Tyrol (Northern Italy)

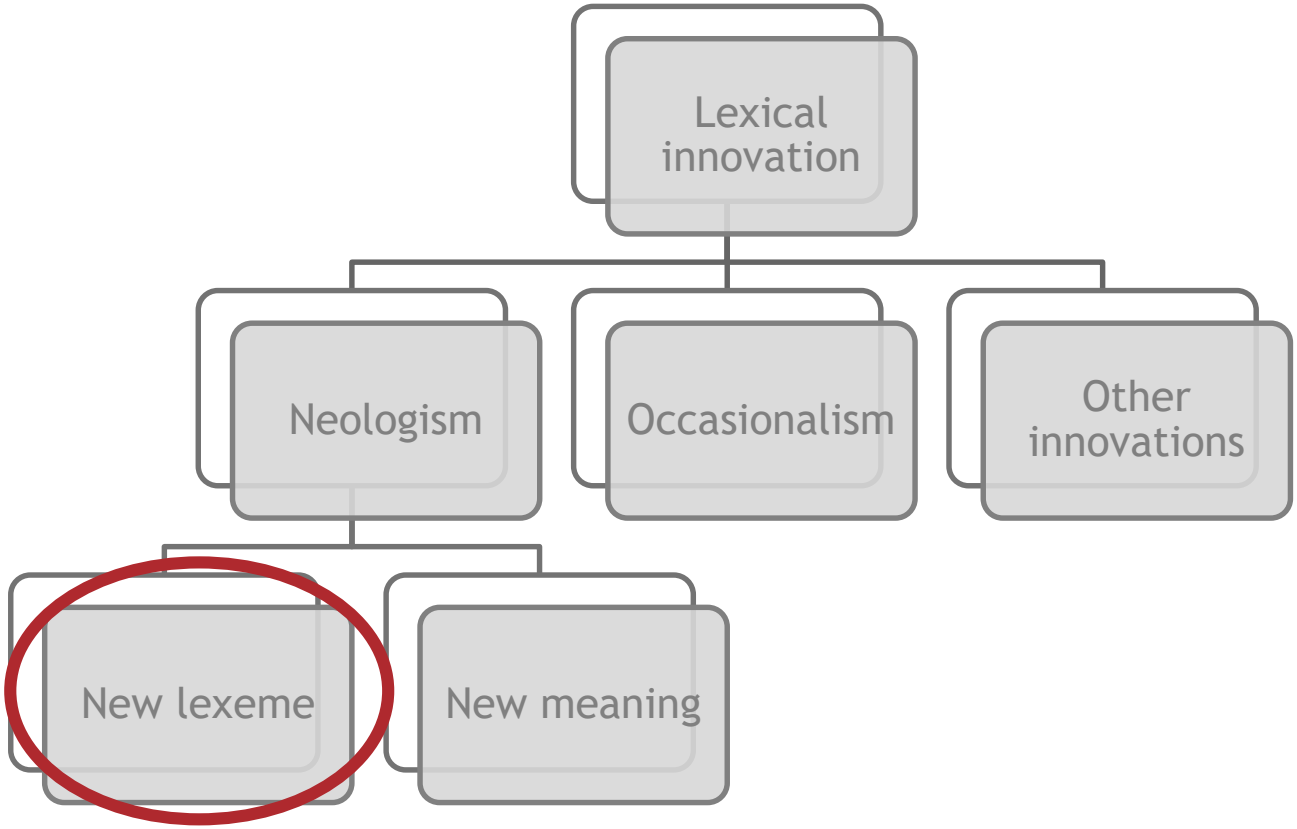
- Language observation and evaluation of trends of the local standard variety of the German language
- Consideration for future editions of the “Variantenwörterbuch des Deutschen” (Dictionary of variants of the German language) (Ammon et al. 2016) and other dictionaries

A small excursus …

- Research on the German standard variety used in South Tyrol

- Based on the concept of pluricentricity of the German language (cf. Clyne 1992, Ammon 1995):
  differing standard varieties used in the German speaking area (official status, taught in school, codices, etc.)
- South Tyrol as an interesting object of linguistic studies:
  - role as “national semi-centre” from a pluricentric perspective
  - marginal position within the German speaking area
  - the language contact situation

Some definitions



(Kinne 1998: 56, adapted version)

Some definitions

Neologism candidates:

- new lexems, not lexicalised
- used in general language or common academic language (“alltägliche Wissenschaftssprache”, cf. Ehlich 1993, 1999)
- consideration of the written standard language
- no misspellings/typos
- no named entities
- no inflected forms of lexicalised words
- no distinction from occasionalisms possible

Some definitions

STyrLogism candidates:

- neologism candidates
- usage limited to South Tyrol
  (not present in the German reference corpus DECOW14, Schäfer/Bildhauer 2012, and in the German neologism platform “Wortwarte”, Lemnitzer 2000-2017)

(Remark: Frequency currently not taken into consideration)

Related work

Different approaches for neologism detection:

1. Use language resources, like *known words* or *word patterns*
   (approach is often applied to a single set of new data)
2. Use statistical measures or unsupervised machine learning
   (approach is often applied to multiple data sets, e.g. diachronic data)
3. Use a combination of 1. and 2.

Related work

1. Use of language resources:
    - Methods based on *known words* use word lists compiled from existing lexicographic resources, such as dictionaries or corpora, combined with filters for the elimination of non-words, typographical errors, named entities, etc.
    - Methods based on *word patterns* use lexical cues, e.g. markers of lexical novelty like punctuation marks that can signal new words.

(O'Donovan 2008, Paryzek 2008)

Related work

2. Use of statistics and (unsupervised) machine learning:
    - Statistical measures and machine learning methods can be applied to calculate and asses an increase in usage over time.

(Kilgarriff 2015, Stenetorp 2010)

3. Combination of methods:
    - These methods can also be combined, like training a classifier to recognise successful and promising word formation patterns, e.g. on the basis of manually classified unknown words.

Method

1. Retrieve web pages (of pre-selected web sites) through web crawling
2. Clean the web pages (Boilerplate removal, deduplication, etc.)
3. Build a corpus, extract word list, filter with *known words* and remove non-words
4. Present list of possible neologisms to linguist(s) for analysis

This is similar to e.g.

- NeoCrawler (Kerremans et al. 2012)
- Wortwarte (Lemnitzer 2000 - 2017)
- Neoloog (being developed at INT; Stemle /Jakubiček / Tiberius ENeL 2015 presentation)

Data (1st round)

Data preprocessing:

- 44 seed URLs (online newspapers, magazines) used for web crawling in June 2016
- After 2 days of crawling 250k URLs were processed

- After removing very short and very long documents, and deduplication 40k documents were left

- After paragraph deduplication the final size of the corpus was: 11Mio tokens (200k unlemmatised types)

Data (1st round)

Reference Data (60M + 30k types):

- General German Web Corpus (12Bio tokens with 60Mio types): DECOW14
- Named entities, terminological terms and other lists (~30,000 types):
  - AU-CH-STyr-ismen: 3,272 type
  - STyr NEs: 12,499 types
  - VWB: 14,466 types
  - Wortwarte

After comparing the data sets ~4,500 STyrLogism candidates were left for manual checking.

Data (2nd round)

Data preprocessing:

- 156 seed URLs (online newspapers, magazines) used for web crawling in March 2018
- After 3 days of crawling 500k URLs were processed

- After removing very short and very long documents, and deduplication 54k documents were left

- After paragraph deduplication the final size of the corpus was: 35Mio tokens (260k unlemmatised types)

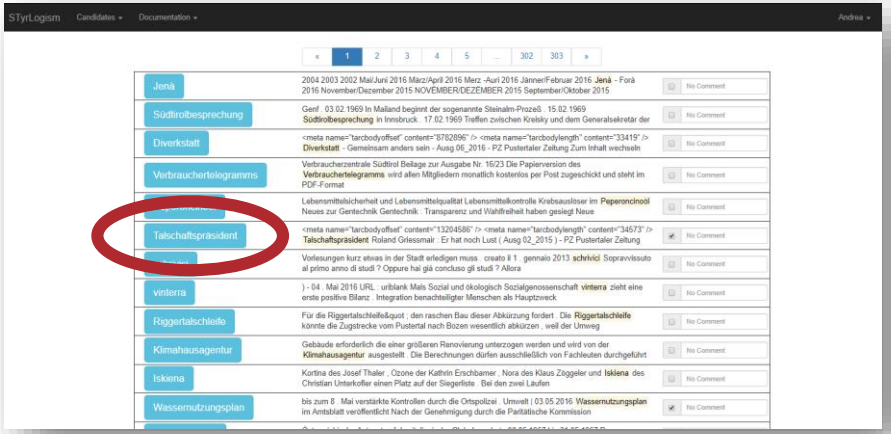
Data (2nd round)

Reference Data (60M + 30k types):

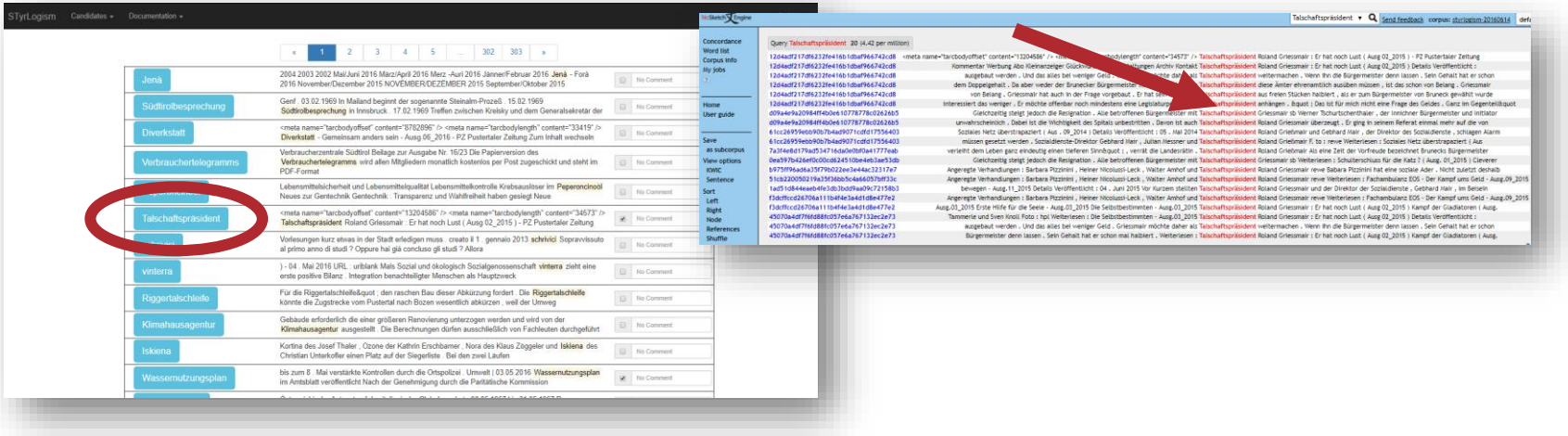
- General German Web Corpus (12Bio tokens with 60Mio types): DECOW14
- Named entities, terminological terms and other lists (~30,000 types):
  - AU-CH-STyr-ismen: 3,272 type
  - STyr NEs: 12,499 types
  - VWB: 14,466 types
  - Wortwarte

After comparing the data sets ~7,600 STyrLogism candidates were left for manual checking.

Web interface



Web interface



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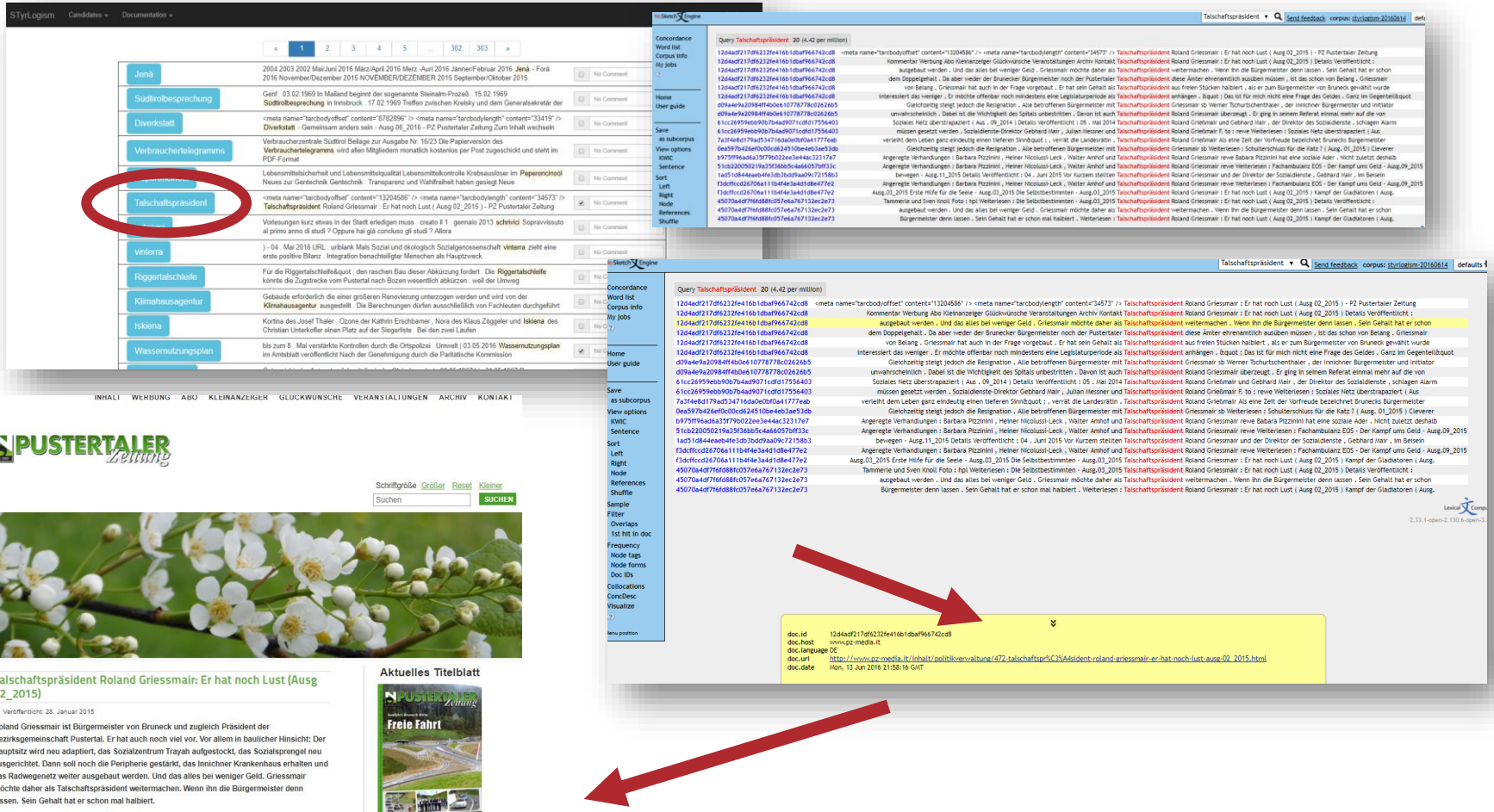

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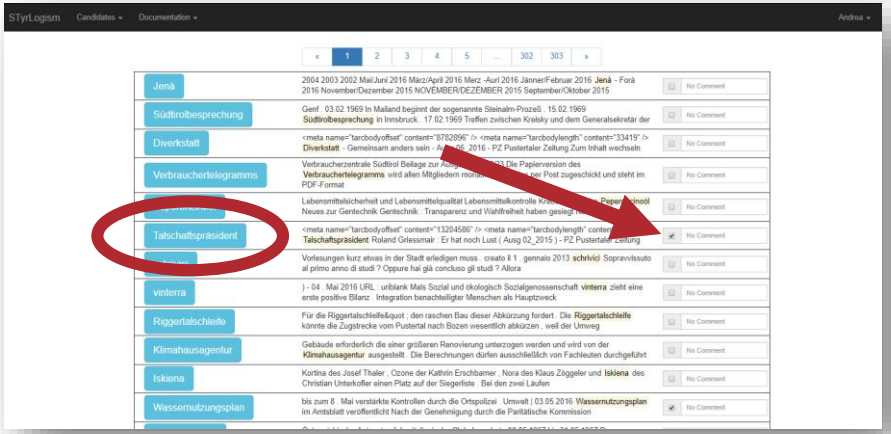

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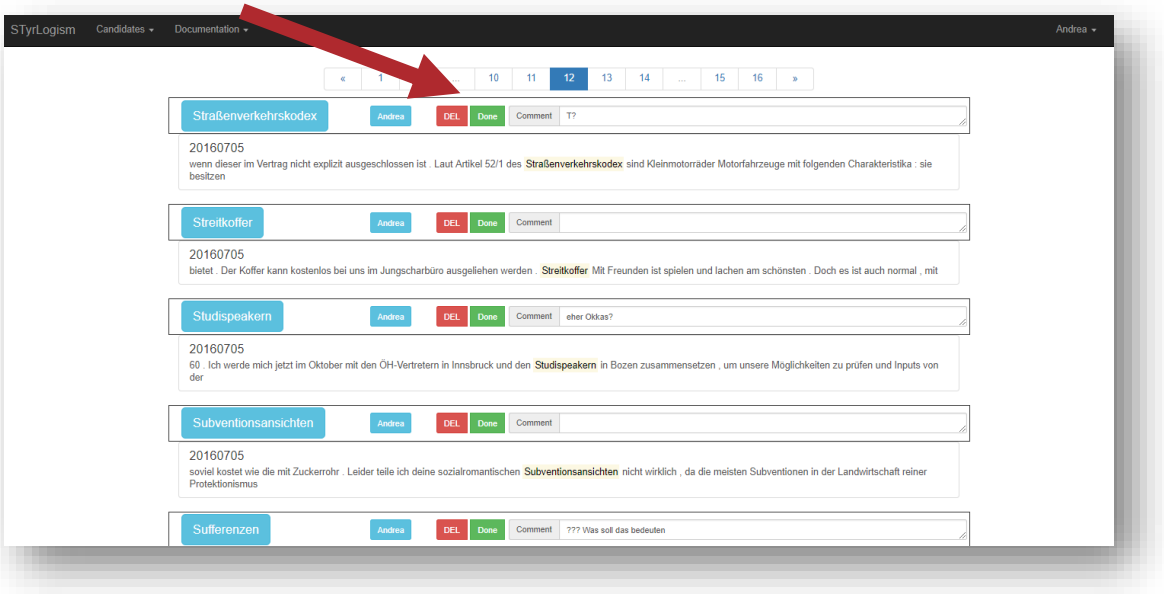

Preliminary results

First round:

- list of 43 manually selected URLs
- cleaning & comparison with reference material
- manual evaluation of the ~ 4,000 remaining STyrLogism candidates
- selection of 340 candidates for further analysis

Preliminary results

Attempt to a preliminary classification of STyrLogism candidates:

„Landeszusatzvertrag“
(regional amendment of a national collective agreement)

T (Terms):
legal & administrative common terms

K (Compounds):
compounds with components of lexicalised variants of the standard German (STIR)

„Luxuspensionär“
(a retired person receiving a very high pension)

„Wahlsektion“
(a part of a municipality whose inhabitants go to the same voting center)

V (Variants):
common words used in the standard German (STIR) but not yet lexicalised

M (Morphological features):
common words with uncommon word formation features

„Mittelstandperson“
(middle class person)

N (Neologisms):
„true“ neologism candidates

„Vollautonomist“
(person standing for a „full“ political autonomy remaining part of the Italian state)

Preliminary results

Second round:

- list of 156 manually selected URLs
- cleaning & comparison with reference material
- list of ~7,600 STyrLogism candidates
- reappearance of only 7 monitored candidates from the first round
- ! manual evaluation still outstanding !

Preliminary results

Exemplary word field: “autonomy” (in a political sense)

- second round: morphological variations of “autonomiefreundlich” (autonomy-friendly) and “autonomiefeindlich” (anti-autonomy)
- first round: “Vollautonomist”
- similar forms present in reference data, e. g. “dynamische Autonomie” (dynamic autonomy)

Conclusions & outlook

First findings:

- suitable approach for finding word forms not included in the reference material
- not yet possible to distil a larger amount of lexical units persisting over time

Challenges & next steps:

- content shared via few media outlets
- paywall for larger text snippets
- use of CMC data

Software available under an open source license (ASF 2.0)
https://gitlab.inf.unibz.it/commul/styrlogism/

Thank you for your attention!

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