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Abstract

This is the place to put the English version of the abstract.

Zusammenfassung

Und hier sollte die Zusammenfassung auf Deutsch erscheinen.

Acknowledgement

I want to thank X, Y and Z for their precious help. And many thanks to whoever for proofreading the present text.

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List of Acronyms

POS	Part-Of-Speech
SRL	Semantic Role Labelling OR Semantic Role Labeller
STTS	Stuttgart-Tübingen-TagSet

1 Introduction

1.1 Motivation

Some words on your motivation would be nice.

1.2 Research Questions

The research questions that shall be answered in this thesis, are:

1. What do I do?
2. How do I do it?
3. And why?

1.3 Thesis Structure

In this first chapter ...

Chapter 2 introduces ...

Chapter 3 ...

2 Semantic Roles

2.1 Overview

“The main reason computational systems use semantic roles is to act as a shallow meaning representation that can let us make simple inferences that aren’t possible from the pure surface string of words, or even from the parse tree.” [Jurafsky and Martin, 2019, p. 375]

3 Data Sets

3.1 Why create an own corpus?

3.2 Corpora

3.2.1 deISEAR

As Troiano et al. [2019] write in their

3.2.2 MLQA_V1

Lewis et al. [2019] compiled

3.2.3 PAWS-X

Yang et al. [2019]

3.2.4 SCARE

Sänger et al. [2016]

3.2.5 XNLI

Conneau et al. [2018]

3.2.6 XQuAD

Artetxe et al. [2019]

4 Architecture

4.1 Overview

4.2 Semantic Role Labeller

State-of-the-art semantic role labellers (SRLs) are end-to-end models, implementing For my system, I implement the DAMESRL, a model presented by Do et al. [2018]. I use their pre-trained German Character-Attention model which, according to the authors, achieved an F1 score of 73.5 on the CoNLL’09 task [Hajič et al., 2009].

“A major advantage of dependency grammars is their ability to deal with languages that are morphologically rich and have a relatively free word order.” [Jurafsky and Martin, 2019, p. 274] For extracting predicates, I rely on the dependency tree the ParZu parser Sennrich et al. [2013] generates for a given sentence. Since one sentence can have multiple predicate-argument structures, I need to devise an algorithm to extract the relevant predicates in a sentence. This is not as straight forward as it seems on the first look. Consider the sentence

(4.1) Die Pakete werden einzeln weitergeleitet, was manchmal zu unterschiedlichen Pfaden und einer fehlerhaften Übertragung führt.

whose dependency parse tree is shown in Figure 1: This sentence has three verbs in it, **werden**, **weitergeleitet**, and **führt**, but only the last two of them are relevant predicates, i.e. predicates that carry “true” semantics.

I propose the following algorithm 1 deciding whether a verb in a sentence is or isn’t a predicate using the a heuristic, mostly relying on the STTS-tags [Schiller et al., 1999] of the parser’s output:

The condition on line 9, that only tokens in the respective subclause are considered, is ensured by making sure that if a token u ’s POS is “V” and it points to its head t , that it is not itself the head of a subclause — i.e. its dependency relation is e.g. “relative clause”. Consider again the example 4.2:

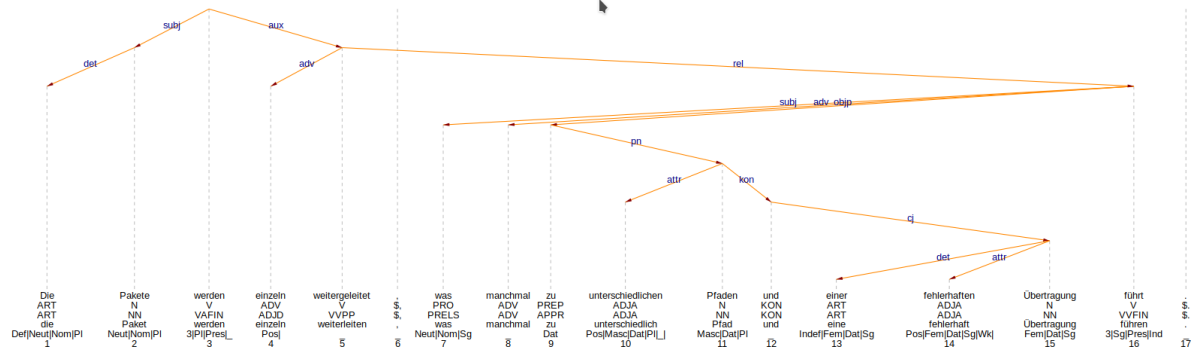


Figure 1: Example sentence with multiple predicates.

4.3 German BERT

Algorithm 1 Predicate finding algorithm

```
1: for all token  $t \in$  sentence do
2:   if POS  $t \neq$  'V' then
3:      $t \leftarrow$  NOT_PRED
4:   else
5:     if STTS  $t =$  'VVFIN' then
6:        $t \leftarrow$  PRED
7:     else
8:       FLAG  $\leftarrow$  True
9:       for all token  $u \neq t \in$  subclause where  $t \in$  subclause do
10:        if POS  $u =$  'V'  $\wedge$   $u$  dependent on  $t$  then
11:           $t \leftarrow$  NOT_PRED
12:          FLAG  $\leftarrow$  False
13:          break
14:        end if
15:      end for
16:      if FLAG = True then
17:         $t \leftarrow$  PRED
18:      end if
19:    end if
20:  end if
21: end for
```

5 Results

5.1 BLEU Scores

Table 1 shows how to use the predefined tab command to have it listed.

language pair	ABC	YYY
EN→DE	20.56	32.53
DE→EN	43.35	52.53

Table 1: BLEU scores of different MT systems

And we can reference the large table in the appendix as Table 2

5.2 Evaluation

We saw in section 5.1

We will see in subsection 5.2.1 some more evaluations.

5.2.1 More evaluation

5.3 Citations

Although BLEU scores should be taken with caution (see Callison-Burch et al. [2006]) or if you prefer to cite like this: [Callison-Burch et al., 2006] ...

to cite: [Koehn, 2005, 30-31]

to cite within parentheses/brackets: [Koehn, 2005], [Koehn, 2005, 30-32]

to cite within the text: Koehn [2005], Koehn [2005, 37]

only the author(s): Callison-Burch et al.

only the year: 2006

5.4 Graphics

To include a graphic that appears in the list of figures, use the predefined `fig` command:

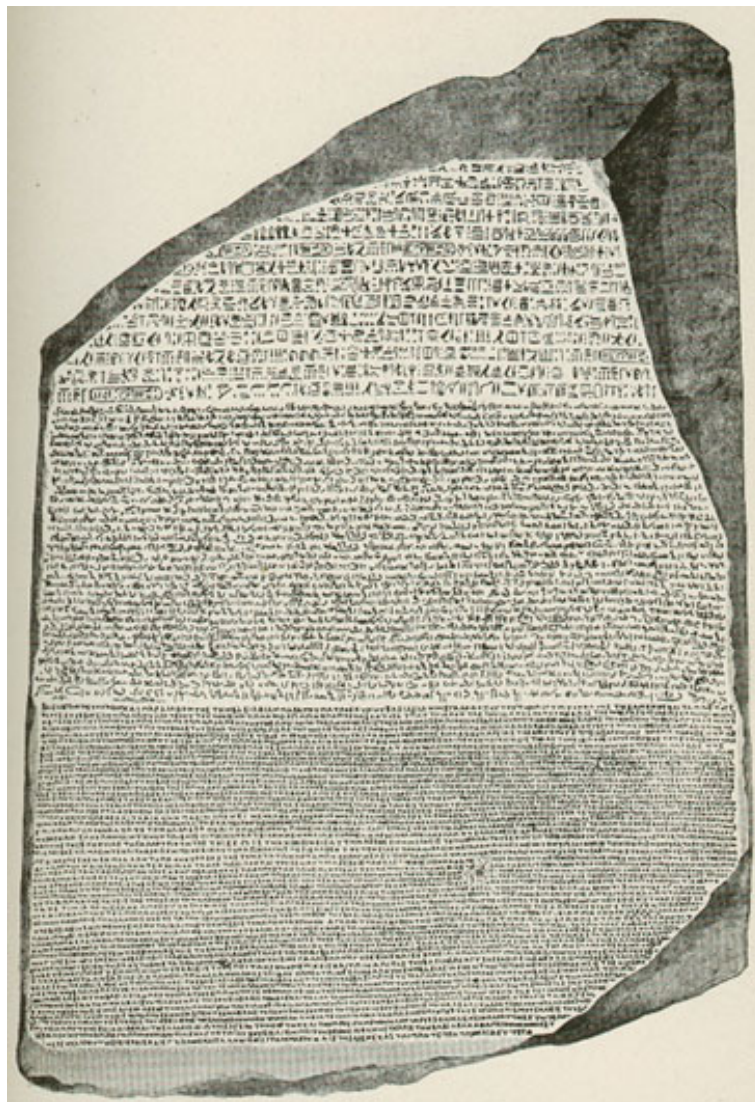


Figure 2: The Rosetta Stone

And then reference it as Figure 2 is easy.

5.5 Some Linguistics

(With the package 'covington')

Gloss:

- (5.1) *The cat sits on the table.*
die Katze sitzt auf dem Tisch
'Die Katze sitzt auf dem Tisch.'

Gloss with morphology:

- (5.2) *La gata duerm -e en la cama.*
Art.Fem.Sg Katze schlaf -3.Sg in Art.Fem.Sg Bett
'Die Katze schläft im Bett.'

6 Conclusion

In this project we have done so much.¹

We could show that ...

Future research is needed.

The show must go on.

¹Thanks to many people that helped me.

Glossary

Of course there are plenty of glossaries out there! One (not too serious) example is the online MT glossary of Kevin Knight ² in which MT itself is defined as

techniques for allowing construction workers and architects from all over the world to communicate better with each other so they can get back to work on that really tall tower.

accuracy A basic score for evaluating automatic **annotation tools** such as **parsers** or **part-of-speech taggers**. It is equal to the number of **tokens** correctly tagged, divided by the total number of tokens. [...]. (See **precision and recall**.)

clitic A morpheme that has the syntactic characteristics of a word, but is phonologically and lexically bound to another word, for example *n't* in the word *hasn't*. Possessive forms can also be clitics, e.g. The dog's dinner. When **part-of-speech tagging** is carried out on a corpus, clitics are often separated from the word they are joined to.

²Machine Translation Glossary (Kevin Knight): <http://www.isi.edu/natural-language/people/dvl.html>

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Lebenslauf

Persönliche Angaben

Ich Persönlich

Meinestrasse Nr

PLZ Wohnort

ichpersoenlich@uzh.ch

Schulbildung

2012-2014 Bachelor-Studium Computerlinguistik und Sprachtechnologie
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Berufliche und nebenberufliche Tätigkeiten

2012–2013 Tutorate PCL I+II

A Tables

Part of speech	POS type	number of labels	
		POS	in my corpus
14	DET	35	280
14	DET	35	280
14	DET	35	280
14	DET	35	280
14	DET	35	280
14	DET	35	280
14	DET	35	280
14	DET	35	280
14	DET	35	280
14	DET	35	280
14	DET	35	280
14	DET	35	280
14	DET	35	280
14	DET	35	280
14	DET	35	280
14	Total	35	280

Table 2: Some very large table in the appendix

B List of something

This appendix contains a list of things I used for my work.

- apples
 - export2someformat
- bananas
- oranges
 - bleu4orange
 - rouge2orange