Universal Argument Unit Recognition and Classification

CIS & UKP

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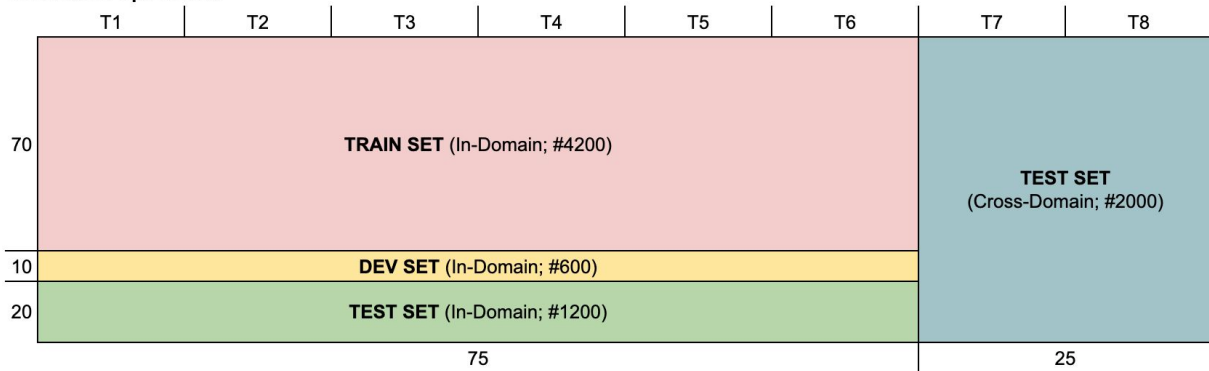# Overview

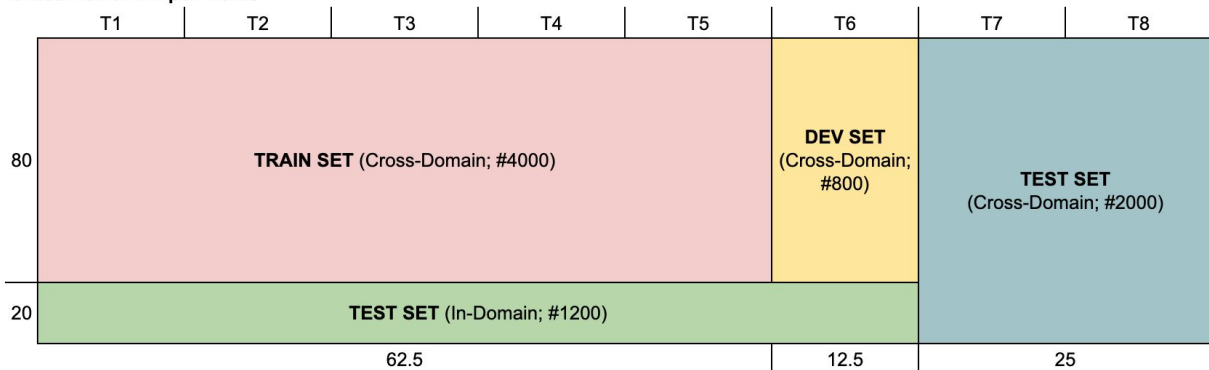| STEPS	ACTION	INFO
I	SEARCH	UKP Elasticsearch over Common Crawl 2016-07; topics=8; number_of_docs=500
II	CHECK	Common Crawl 2016-07 INDEX; topics=8; number_of_docs=500
III	DOWNLOAD	WARC Data
IV	EXTRACT	WARC Files
V	PARSE	HTML & TEXT Files
VI	TOKENIZE	Sentences
VII	CLASSIFY	Argument Candidates
VIII	SELECT	RANK by docScore, argConfidence, stanceConfidence and Combinations of them
IX	ANNOTATE	8 Topics * 2 Stance * 500 Sentences = 8000 Sentences
X	MODEL	Sequence Labeling and Segmentation (Recognition + Classification)

Overview (cont.)

#	topics	ES #docs	TEXT #docs	#sentences	#arg_candidates	#annotated_sentences	#arguments (pro/con)	#arguments (None)
T1	abortion	491	454	39,083	3,282	1,000	424	576
T2	cloning	495	252	30,504	2,594	1,000	353	647
T3	marijuana legalization	490	472	45,644	6,351	1,000	630	370
T4	minimum wage	494	479	43,128	8,290	1,000	630	370
T5	nuclear energy	491	470	43,576	5,056	1,000	623	377
T6	death penalty	491	484	33,253	6,079	1,000	598	402
T7	gun control	497	479	38,443	4,576	1,000	529	471
T8	school uniforms	495	475	40,937	3,526	1,000	713	287
	SUM	3,944	3,565	314,568	39,754	8,000	4,500	3,500

Dataset Splits (Train / Dev / Test)

4

Probleme bei den Annotationen

- Einige Fehler an den "Grenzen" von Segmenten/Annotationen
    - Ein großes Segment als zwei kleine Segmente
- Können nicht durch einfache Verfahren behoben werden

Annotationen - Beispiel 1

sentenceHash: b32fae50c6493bcdfaa951956b64ee49

annotation_token: con;con;con; (6,8);(14,7);(26,6);
Conservatives believe that the label " pro - choice " is a misnomer because the child does not have a choice and pro - aborts typically oppose any choice for the father .

1. Annotator: AURYD2FH3FUOQ ('false', '(14,7)', 'con')
Conservatives believe that the label " pro - choice " is a misnomer because the child does not have a choice and pro - aborts typically oppose any choice for the father .

2. Annotator: APG73D1ZUNTXV ('true', None, None)
Conservatives believe that the label " pro - choice " is a misnomer because the child does not have a choice and pro - aborts typically oppose any choice for the father .

3. Annotator: AZLZA0Q87TJZO ('false', '(14,7)', 'con')
Conservatives believe that the label " pro - choice " is a misnomer because the child does not have a choice and pro - aborts typically oppose any choice for the father .

4. Annotator: A2CFE6AZS73RNS ('false', '(26,6)', 'con')
Conservatives believe that the label " pro - choice " is a misnomer because the child does not have a choice and pro - aborts typically oppose any choice for the father .

5. Annotator: A1OPGPTQJ48XOY ('false', '(6,15)', 'con')
Conservatives believe that the label " pro - choice " is a misnomer because the child does not have a choice and pro - aborts typically oppose any choice for the father .

Annotationen - Beispiel 2

sentenceHash: 5b63d236406e92ba94a5fa4e53188947

annotation_token: pro;pro;pro;pro;pro; (0,5);(5,7);(12,7);(19,7);(27,6);
They want no more children They cannot afford to raise a child They are unmarried or still in school Their partners does not want the pregnancy or there is a problem with relationship

1. Annotator: A2CK0OXMPOR9LE ('false', '(0,5);(5,7);(12,7);(19,7);(27,6)', 'pro;pro;pro;pro;pro')
They want no more children They cannot afford to raise a child They are unmarried or still in school Their partners does not want the pregnancy or there is a problem with relationship

2. Annotator: AURYD2FH3FUOQ ('true', None, None)
They want no more children They cannot afford to raise a child They are unmarried or still in school Their partners does not want the pregnancy or there is a problem with relationship

3. Annotator: A3I9XLIHPPWPN1 ('true', None, None)
They want no more children They cannot afford to raise a child They are unmarried or still in school Their partners does not want the pregnancy or there is a problem with relationship

4. Annotator: A3NVIEABTAT3F1 ('false', '(0,5);(5,7);(12,7);(19,14)', 'pro;pro;pro;pro')
They want no more children They cannot afford to raise a child They are unmarried or still in school Their partners does not want the pregnancy or there is a problem with relationship

5. Annotator: A1USAISEEYNB61 ('true', None, None)
They want no more children They cannot afford to raise a child They are unmarried or still in school Their partners does not want the pregnancy or there is a problem with relationship

Annotationen - Beispiel 3

sentenceHash: baf53aefd8820b13f36c5e82e3f62bc8

annotation_token: pro;con;con; (2,9);(11,5);(16,11);
However , there were still some serious misperceptions such as : abortion could cause cancer and abortion would lead to birth of an abnormal child in future as reported in this study .

1. Annotator: AZLZA0Q87TJZO ('false', '(11,4);(16,11)', 'con;con')
However , there were still some serious misperceptions such as : abortion could cause cancer and abortion would lead to birth of an abnormal child in future as reported in this study .

2. Annotator: A3GVXFBYAU9HP ('false', '(2,25)', 'pro')
However , there were still some serious misperceptions such as : abortion could cause cancer and abortion would lead to birth of an abnormal child in future as reported in this study .

3. Annotator: AXMPSUNKUBEIL ('false', '(2,23)', 'pro')
However , there were still some serious misperceptions such as : abortion could cause cancer and abortion would lead to birth of an abnormal child in future as reported in this study .

4. Annotator: A2CMYWI1J292YJ ('false', '(11,4);(16,11)', 'con;con')
However , there were still some serious misperceptions such as : abortion could cause cancer and abortion would lead to birth of an abnormal child in future as reported in this study .

5. Annotator: AW1QY7Q83DYCJ ('false', '(11,4);(16,9)', 'con;con')
However , there were still some serious misperceptions such as : abortion could cause cancer and abortion would lead to birth of an abnormal child in future as reported in this study .

Models

- Baselines:
  - Frequency-based
  - Rule- & Feature-based (from train set extracted; "linguistic" features)
- Neural Models:
  - Neural Sequence Labeling (BIOES; Char-CNN & Word-BiLSTM & CRF-Layer)
  - Neural Feature Extractor + Semi-Markov CRF
  - Large Language Models (ElMo, BERT, GPT-*)
- Others (?)

Rule- & Feature-based Baseline

- Wortlisten (uni-grams) vor und nach den argumentativen Segmenten
- Part-of-Speech Listen (tri-grams) innerhalb von Segmenten

5605e9045975654df514f9d11f7c7498 con; (4,16);
It is estimated that medical abortions are 5 to 10 times as likely to " fail " as surgical ones , therefore requiring surgical intervention in a then - advanced pregnancy .

d729a4d395f3e9c71e592bbf5bf2cdd3 pro;con;con; (3,9);(14,6);(22,9);
He concludes : a Vertebrate cloning poses little risk to the environment , but it can consume scarce conservation resources , and its chances of success in preserving species seem poor .

9f7781e05d320d95806719ca558c13ab con; (20,14);
One of the main ideas of using the death penalty is to act as an example to others ; however many criminologists agree that the death penalty is not a deterrent to capital crimes .