Entity Tagging & Linking

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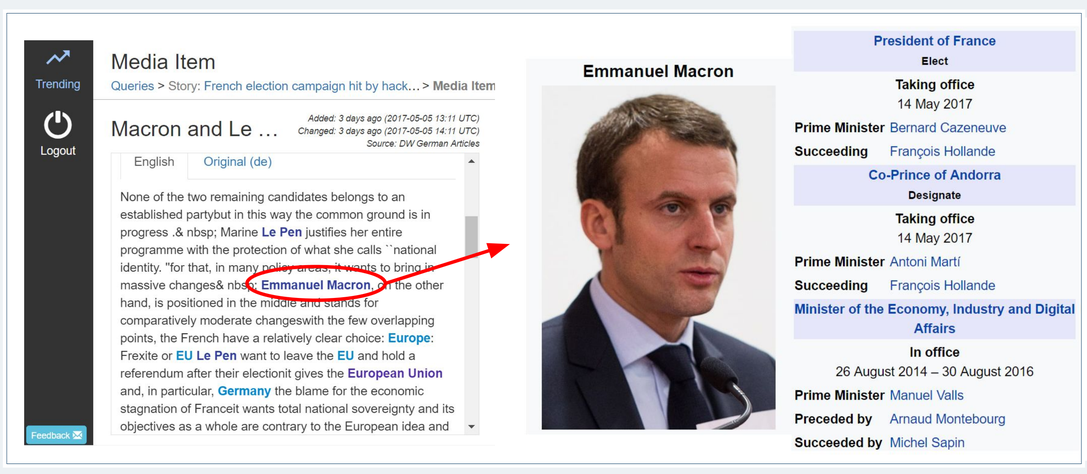
Goals

- To develop statistical models for entity recognition and linking.
- Explore multilingual approaches for the core languages of the project (English, German, Spanish) and for Portuguese.

Named Entity Recognition (NER)

- Strong industrial implementation that uses a sequence labeling model with gazetteers.
- New approaches using deep neural networks with bidirectional LSTMs and character- and word-level embeddings can achieve higher scores.

Entity Linking



- State-of-art industrial implementation, with document-level and copora-level coherence steps
- Good results for English and Spanish.
- The model has a small number of parameters, being easily portable between different languages.
- New approaches using deep neural networks are being tested.

What are the Challenges?

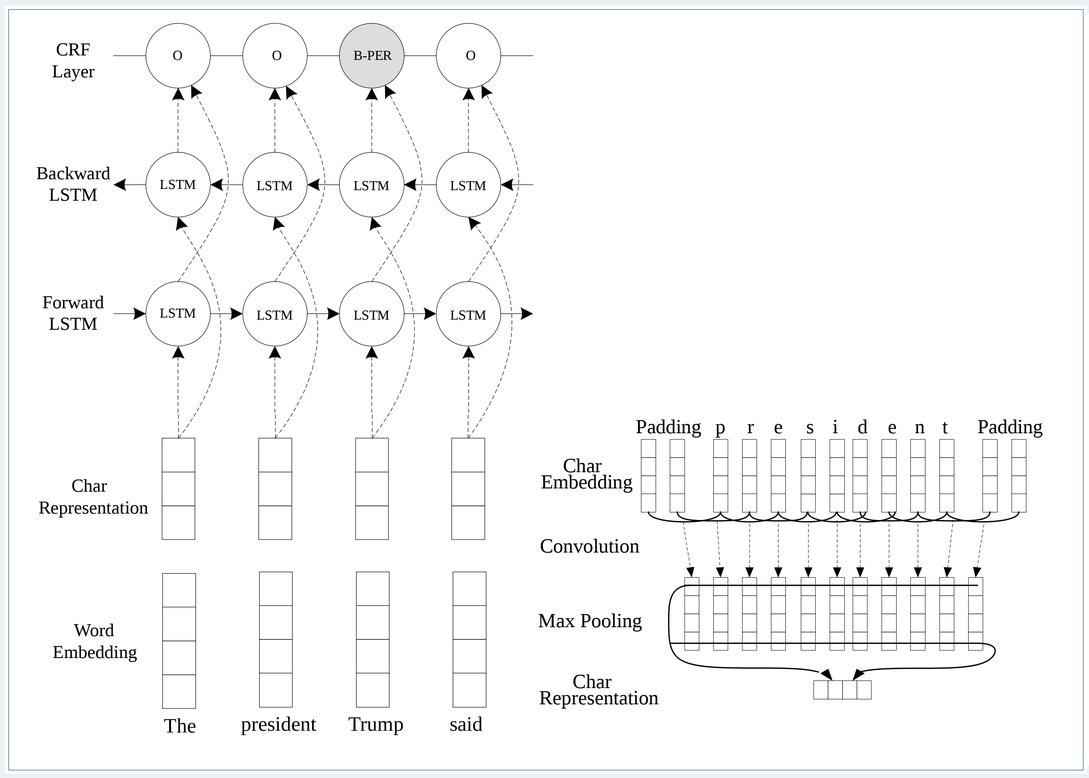
- Named entity recognition performance is directly connected with the amount of data used for training.
- Ensemble methods for named entity recognition.
- Learn a suitable cross-lingual representations for entities.
- Explore multilingual approaches.

Text Analysis Conference (TAC)

- Participation in 2016 Entity Discovery and Linking (EDL) track.
- Planning 2017 participation in the same task.
- NER was the main bottleneck of our TAC 2016's submission.

NER System	Model	Training Data	NER	NERC
Summa (TAC-2016)	Linear	TAC+OntoNotes	83.1	76.1
Summa (2017)	Linear	TAC	81.67	77.61
Summa (2017)	Linear	TAC+OntoNotes	85.68	81.23
SummaNN (2017)	Neural	TAC+OntoNotes	87.87	84.49
USTC (TAC-2016)	Neural	TAC+iFLYTEK	**90.55**	**87.79**

SUMMA NER system performance with different models and datasets.



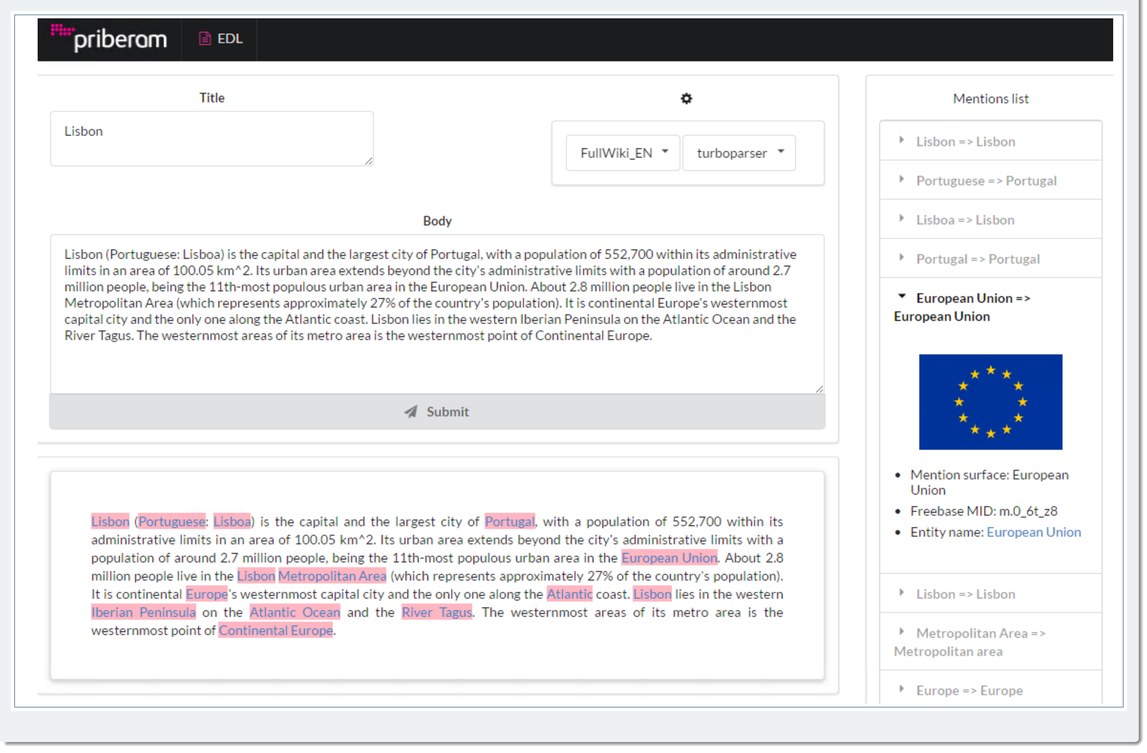
Architecture for SummaNN System.

- Our Entity linking system has state-of-art performance.

Entity Linking System	NERL	KBIDs	CEAFm
Best Team (TAC 2016)	81.1	81.1	83.2
Summa (TAC 2016)	81.8	81.0	83.3
Summa Improved	**83.4**	**81.3**	**86.1**

Entity Linking system performance using entities provided by the USTC system.

Demo



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