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Semantic Indexing of Multilingual Corpora and its Application on the History Domain

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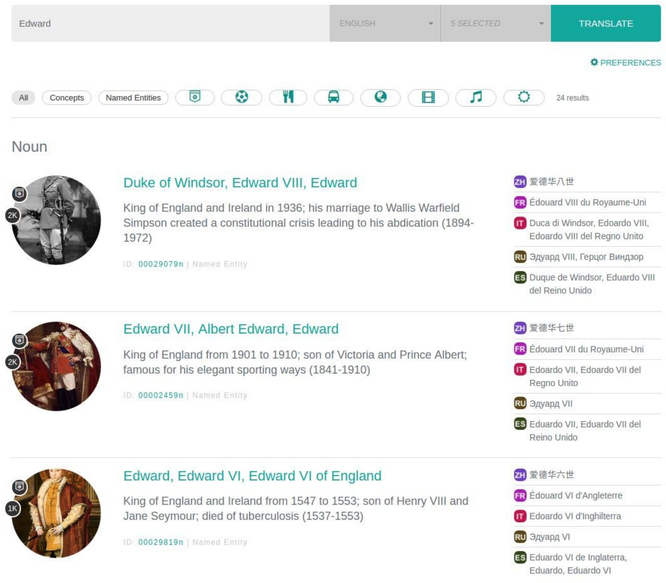
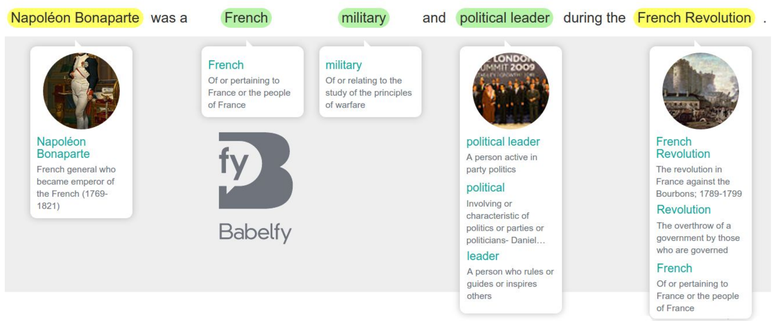
Semantic Resources

BabelNet
-Multilingual Knowledge Base-



Babelfy
-Multilingual Disambiguation and Entity Linking-

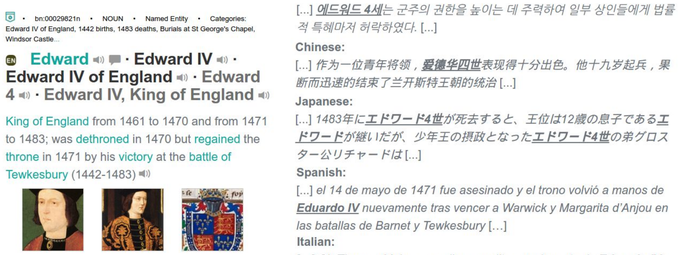


Semantic Indexing of Multilingual Corpora

Based on the pre-disambiguation of a corpus (Babelfy)

Search by **concept/entity**. Two main advantages over keyword searches:

- **Unambiguous search**
- **Search in different languages**



XML format

```
<dataset language="EN" title="GEN">
<paragraph id="p.1">
    <text>
        In the beginning God created the heaven and the earth.
        And the earth was without form, and void; and darkness was upon the face of the deep.
        And the Spirit of God moved upon the face of the waters.
        ...
    </text>
    <annotations>
        <annotation source="MCS" anchor="beginning" bfScore="--" coherenceScore="--">bn:00009632n</annotation>
        <annotation source="BABELFY" anchor="God" bfScore="0.7620" coherenceScore="0.7913">bn:00040878n</annotation>
        <annotation source="MCS" anchor="created" bfScore="--" coherenceScore="--">bn:00086008v</annotation>
        <annotation source="BABELFY" anchor="earth" bfScore="0.8485" coherenceScore="0.8079">bn:00029424n</annotation>
        ...
    </annotations>
</paragraph>
...
```

Disambiguation quality

Evaluation corpus: Two chapters of the Bible

Baseline: MCS (Most Common Sense)

Results (Precision):

		English	Spanish
All	Our	68.8	58.8
	MCS	51.1	44.0
Nouns	Our	74.2	63.4
	MCS	58.7	47.8

Cross-lingual text retrieval

Task: Given a paragraph/text as input, retrieve its most similar texts (in *any* language)

Method:
- Texts are represented as a set of unambiguous concepts/entities
- Similarity measure: Jaccard coefficient for sets

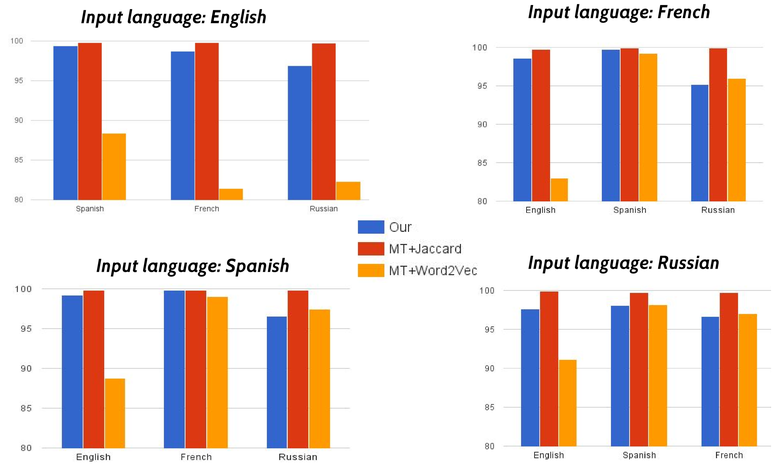
Experiments

Evaluation corpus: The Bible

Languages: English, French, Russian and Spanish

Task: Given an input chapter in the input language, retrieve the same chapter in the output language.

Baselines: Jaccard similarity after Machine Translation (*MT+Jaccard*) and Cosine similarity of the average of word embeddings after Machine Translation (*MT+Word2Vec*)



Release: Data and Interface

http://wwwusers.di.uniroma1.it/~raganato/semantic-indexing/

References

- Roberto Navigli and Simone Paolo Ponzetto. 2012. BabelNet: The automatic construction, evaluation and application of a wide-coverage multilingual semantic network. Artificial Intelligence, 193:217–250.
- Andrea Moro, Alessandro Raganato, and Roberto Navigli. 2014. Entity Linking meets Word Sense Disambiguation: a Unified Approach. Transactions of the Association for Computational Linguistics (TACL), 2:231–244.