

Casting Sequence Tagging as QA tasks for Multilingual and Cross-lingual approaches

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Description / Deskribapena

McCann et al. (2018) introduced the decaNLP challenge, which converts a set of 10 core tasks in NLP to Question Answering, as shown in the following example.

Examples

Question	Context	Answer	Question	Context	Answer
What is a major importance of Southern California in relation to California and the US?	...Southern California is a major economic center for the state of California and the US....	major economic center	What has something experienced?	Areas of the Baltic that have experienced eutrophication .	eutrophication
What is the translation from English to German?	Most of the planet is ocean water.	Der Großteil der Erde ist Meerwasser	Who is the illustrator of Cycle of the Werewolf?	Cycle of the Werewolf is a short novel by Stephen King, featuring illustrations by comic book artist Bernie Wrightson .	Bernie Wrightson
What is the summary?	Harry Potter star Daniel Radcliffe gains access to a reported £320 million fortune ...	Harry Potter star Daniel Radcliffe gets £320M fortune...	What is the change in dialogue state?	Are there any Eritrean restaurants in town?	food: Eritrean
Hypothesis: Product and geography are what make cream skimming work. Entailment , neutral, or contradiction?	Premise: Conceptually cream skimming has two basic dimensions – product and geography.	Entailment	What is the translation from English to SQL?	The table has column names... Tell me what the notes are for South Australia	SELECT notes from table WHERE 'Current Slogan' = 'South Australia'
Is this sentence positive or negative?	A stirring, funny and finally transporting re-imagining of Beauty and the Beast and 1930s horror film.	positive	Who had given help? Susan or Joan?	Joan made sure to thank Susan for all the help she had given.	Susan

More recently, Coreference Resolution was also reformulated as a Question Answering problem with impressive results (Wu et al. 2020)

Original Passage

In addition , *many people* were poisoned when **toxic gas** was released. *They* were poisoned and did not know how to protect *themselves* against **the poison**.

Our formulation

Q1: Who were poisoned when toxic gas was released?

A1: [*They, themselves*]

Q2: What was released when many people were poisoned?

A2: [**the poison**]

Q3: Who were poisoned and did not know how to protect themselves against the poison?

A3: [*many people, themselves*]

Q4: Whom did they not know how to protect against the poison?

A4: [*many people, They*]

Q5: They were poisoned and did not know how to protect themselves against what?

A5: [**toxic gas**]

Previous work has been done for English and we would like to experimentally analyze the benefits of casting tasks as NLP from a crosslingual and multilingual point of view, helping to generate datasets and systems for other languages.

Goals / Helburuak

1. Experiment with existing datasets using deep learning approaches.
2. Re-formulate another popular task as QA (Opinion Mining, etc.)
3. Generate multilingual and cross-lingual systems via automatic translation of existing English datasets.
4. Compare with zero-shot approaches (Conneau et al. 2020).

Figure 1: An illustration of the paradigm shift from coreference resolution to query-based span prediction.

Tasks and plan / Atazak eta plana

- Month 1: Start of the project, defining the objectives and tasks.
- Month 2: Start experiments. Optionally, it is recommended for the candidates to attend the "Seminar on language technologies. Deep Learning (LAP 18)". <https://ixa.si.ehu.es/master/programa.html>
- Months 3-5: Experiments and final development.
- Final month: Writing up.

References

Conneau et al . (2020). [Unsupervised Cross-lingual Representation Learning at Scale](#) (XLM-RoBERTa). In ACL 2020.

[Bryan McCann, Nitish Shirish Keskar, Caiming Xiong, Richard Socher](#) (2018). [The Natural Language Decathlon: Multitask Learning as Question Answering](#). In arxiv.

[Wei Wu, Fei Wang, Arianna Yuan, Fei Wu, Jiwei Li](#) (2020). [CorefQA: Coreference Resolution as Query-based Span Prediction](#). In ACL 2020.