QALD-Mini-Project

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Abstract. The abstract should briefly summarize the contents of the paper in 150–250 words.

Keywords: First keyword · Second keyword · Another keyword.

1 Introduction (Ralf)

The World Wide Web is filled with information for everyone to explore. Most information on the Web is unstructured, what makes it hard to process for humans and computers. The Semantic Web is a approach to provide structured data in the Web that is easy to process by computers and can be processed to be easily understood by humans.

Most Semantic Web Databases use SPARQL as the language to query the database. That means that in order to search the semantic web the user has to learn a query language, that is not very easy to learn. This is not user friendly and can be improved.

The goal of our project is to provide a interface that takes a question formulated in natural language and answers it by querying DBPedia. The interface will be able to be used over the web via HTTP-POST requests. We aim for a F-measure of at last 0.1.

Our project uses a Template-based approach. That means we have defined templates of SPARQL-Queries that are modified at predefined locations based on the question asked. The project consists of three components: The *Question-Answering (QA) Engine*, the *Question-Processor* and the *SPARQLQueryBuilder*. We use the Library *qa.annotation* to find entities, propierties and classes, qa.commons to load and store QALD-datasets and GERBIL QA, a wrapper for web communication.

The *QA Engine* is responsible for providing the interface to users. It reads questions from the Webservice or a predefined dataset and passes the question to the Question Processor. Furthermore the QA Engine is responsible for outputting the answer, i.e sending a HTTP-Response to the user.

Relevant entities contained in the question have to be identified and the question has to be analyzed to determine the type of the question. This is done by the *Question Processor* component.

To get a answer a SPARQL-Query has to be build and executed on a endpoint. That is the responsibility of the *SPARQLQueryBuilder*. This component uses the processed information provided by the Question Processor, builds a SPARQL-Query by using predefined templates and executes the query on an endpoint provided by DBPedia.

2 Simplified Procedure

(Nick)

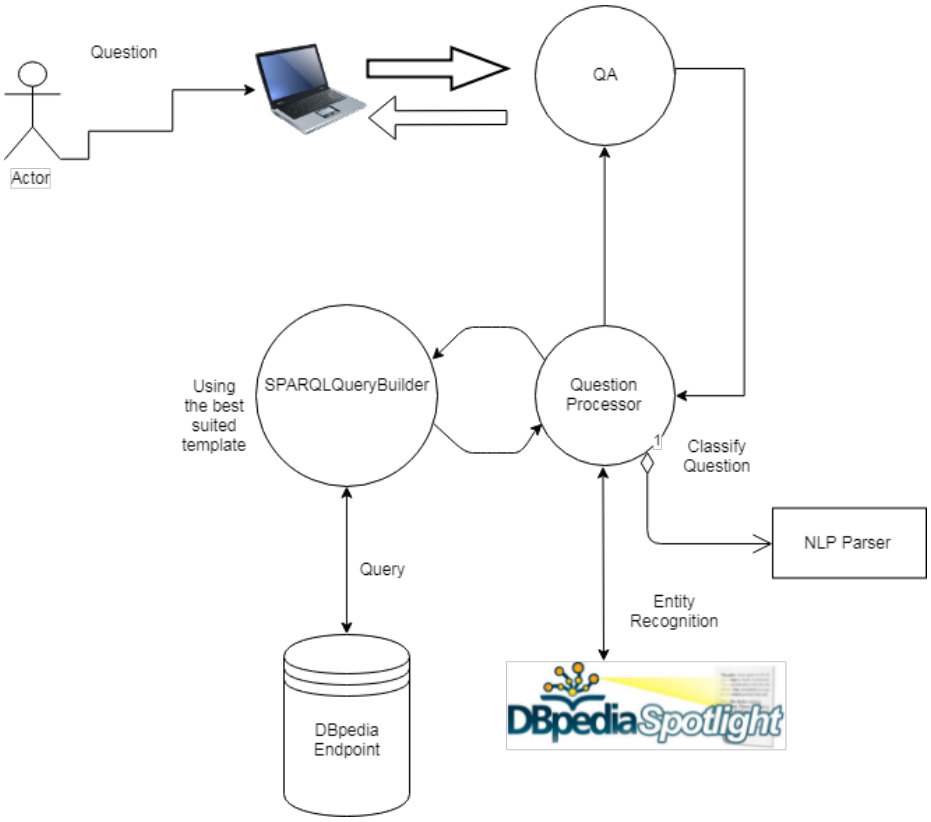

Fig. 1. Architecture.

3 QA System

(Ralf)

3.1 Webservice

4 Question Preprocessing

(Lukas)

5 Template Overview

(Lukas)

5.1 Example

5.2 Superlatives, Comparatives and Temporal Aggregators

(Ralf))(Lukas)

5.3 Example

6 Benchmarking and Evaluation

(Nick)

7 Summary

(Nick)

GERBIL Experiment

Experiment URI: http://gerbil-qa.aksw.org/gerbil/experiment?id=201806200001 and http://w3id.org/gerbil/qa/experiment?id=201806200001
Type: QA
Matching: Me - strong entity match

Annotator	Dataset	Language		Micro F1	Micro Precision	Micro Recall	Macro F1	Macro Precision	Macro Recall	Error Count	avg millis/doc	Macro F1 QALD	Timestamp	GERBIL version
test (uploaded)	QALD8 Test Multilingual	en		0,2857	0,5385	0,1944	0,2124	0,2154	0,2114	0	0,0244	0,33	2018-06-20 10:48:50	0.2.3
test (uploaded)	QALD8 Test Multilingual	en	Answer Type	1	1	1	1	1	1	0			2018-06-20 10:48:50	0.2.3
test (uploaded)	QALD8 Test Multilingual	en	C2KB	0,3949	0,4559	0,3483	0,3723	0,3854	0,376	0			2018-06-20 10:48:50	0.2.3
test (uploaded)	QALD8 Test Multilingual	en	P2KB	0,3133	0,3824	0,2653	0,2764	0,2967	0,2772	0			2018-06-20 10:48:50	0.2.3
test (uploaded)	QALD8 Test Multilingual	en	RE2KB	0,1928	0,2353	0,1633	0,1951	0,1911	0,2033	0			2018-06-20 10:48:50	0.2.3

Fig. 2. Gerbil experiment for the QALD8-Test set, with an F-measure of 0.33.

7.1 A Subsection Sample

Please note that the first paragraph of a section or subsection is not indented. The first paragraph that follows a table, figure, equation etc. does not need an indent, either.

Subsequent paragraphs, however, are indented.

Sample Heading (Third Level) Only two levels of headings should be numbered. Lower level headings remain unnumbered; they are formatted as run-in headings.

Sample Heading (Fourth Level) The contribution should contain no more than four levels of headings. Table 1 gives a summary of all heading levels.

Table 1. Table captions should be placed above the tables.

Heading level	Example	Font size and style
Title (centered)	**Lecture Notes**	14 point, bold
1st-level heading	**1 Introduction**	12 point, bold
2nd-level heading	**2.1 Printing Area**	10 point, bold
3rd-level heading	**Run-in Heading in Bold.** Text follows	10 point, bold
4th-level heading	*Lowest Level Heading.* Text follows	10 point, italic

Displayed equations are centered and set on a separate line.

$$x + y = z \tag{1}$$

Please try to avoid rasterized images for line-art diagrams and schemas. Whenever possible, use vector graphics instead (see Fig. **??**).

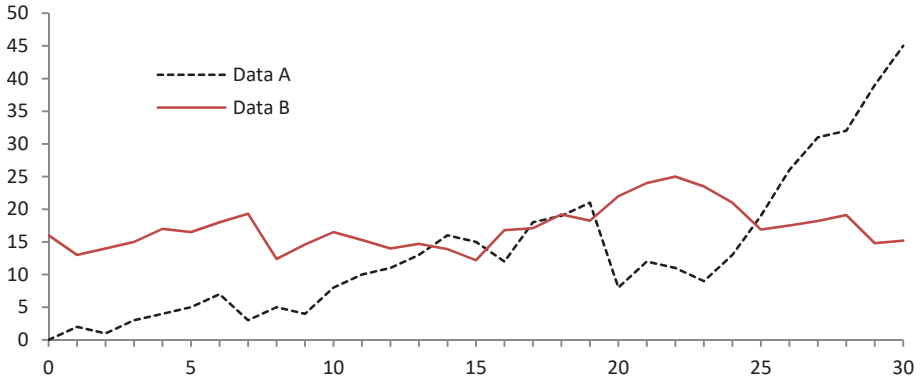

Fig. 3. A figure caption is always placed below the illustration. Please note that short captions are centered, while long ones are justified by the macro package automatically.

Theorem 1. *This is a sample theorem. The run-in heading is set in bold, while the following text appears in italics. Definitions, lemmas, propositions, and corollaries are styled the same way.*

Proof. Proofs, examples, and remarks have the initial word in italics, while the following text appears in normal font.

For citations of references, we prefer the use of square brackets and consecutive numbers. Citations using labels or the author/year convention are also acceptable. The following bibliography provides a sample reference list with entries for journal articles [1], an LNCS chapter [2], a book [3], proceedings without editors [4], and a homepage [5]. Multiple citations are grouped [1–3], [1, 3–5].

References

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