Elas4RDF: Multi-perspective Triple-centered Keyword Search over RDF using Elasticsearch

Giorgos Kadilierakis, Christos Nikas, Pavlos Fafalios, Panagiotis Papadakos, Yannis Tzitzikas

kadilier@csd.uoc.gr, {cnikas, fafalios, papadako, tzitzik}@ics.forth.gr

Institute of Computer Science, Foundation for Research and Technology (FORTH-ICS), GREECE, and
Computer Science Department, University of Crete, GREECE

1. Motivation

Keyword search: Familiar to plain users (web search engines) and entry point to the information space for faceted search

Elasticsearch: A document-centric Information Retrieval System with widespread use in different contexts

The evaluation over DBpedia-Entity v2 test collection has shown that the approach presented in [1] performs similarly to systems built from scratch and use entity-oriented and dataset-specific index structures.

2. Elas4RDF

A triple-centered keyword search engine over RDF that offers Multiple Perspectives (tabs) for the search results: the user can easily inspect all tabs and get a better overview and understanding of the search results.

3. Perspectives

a) Triples tab

Shows the top-ranked triples (precise, explainable)

Extended information from rdfs_comment

Triples can be downloaded

b) Entities tab

Shows the top-ranked entities (from the ranking of triples we produce the ranking of entities). For each entity, the corresponding image from Wikipedia/DBpedia page is shown

c) Graph tab

Visualizes the top-ranked triples as a graph to show how they are connected. The number of retrieved triples can be adjusted (implementation using the JavaScript InfoVis Toolkit)

d) QA tab

Interprets the query as a question and attempts to find the triples that contain a natural language answer. The triple containing the answer, and relevant keywords are shown

4. Conclusions

Elas4RDF is a scalable, efficient and effective method for keyword search over RDF datasets. It follows a triple-centered approach (in contrast to the entity-based approach) for providing more precise and explainable results. It relies on a special configuration of ElasticSearch for the needs of RDF. The approach is totally schema agnostic, and thus widely applicable. For capturing a wide range of information needs, Elas4RDF offers various perspectives for the search results. The current deployment is over DBpedia version 2015-10. In future we plan to add more perspectives, to work on the automatic recognition of the query type and prioritization of the perspectives, and to test the approach over various domain-specific datasets.

6. TRY Elas4RDF

https://demos.isl.ics.forth.gr/elas4rdf