Call for Master Thesis

FIZ Karlsruhe
Leibniz Institute for Information Infrastructure

Slot-Filling for large-scale Knowledge Graphs

Are you interested in making a big impact with your thesis? Work with us on an innovative approach for slot filling real-world Knowledge Graphs.

Slot Filling (SF), aims to extract values for a specific attribute for a real-world entity from a collection of unstructured textual documents. In the last years, slot filling has gained a lot of attention in the general task of Knowledge Graph (KG) population. In KGs, the slots represent the **object** from the triple <`subject, predicate, object`> for a certain subject and predicate. An examples of a slot may include *age*, *birthplace*, *spouse* for a entities of type **Person,** or *founder*, *website* for **Organizations**.

In this thesis, your focus will be on slot filling for large-scale KGs like DBpedia [1] and Wikidata [2]. Both are cross-domain KGs, and some of the largest and widely used KGs. DBpedia is automatically extracted from Wikipedia Infoboxes, whereas Wikidata is a collaboratively constructed from a large user-base. In recent years, there has been a large interest in the use of KGs, like for entity-search, Question Answering, etc., thus, accurate and complete information w.r.t entities in such KGs is of great importance.

The aim of this thesis is to develop an ***automatic slot filling*** approach for DBpedia and Wikidata. The students will use articles from Wikipedia as the main source for finding slot values. Possible approaches will have to use supervised or semi-supervised approaches (e.g. Deep Learning models, or standard feature-based Machine Learning algorithms) to correctly fill the given slots.

This thesis will be supervised by **Prof. Dr. Harald Sack, Information Service Engineering at Institute AIFB, KIT, in collaboration with FIZ Karlsruhe**.

[1] http://wiki.dbpedia.org/
[2] https://www.wikidata.org/

Which prerequisites should you have?

- Good programming skills in Java or Python
- Interest in Semantic Web technologies
- Interest in Machine Learning approaches
- Interest in Deep Learning technologies

DBpedia WIKIDATA WIKIPEDIA The Free Encyclopedia

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