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.


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

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