

Probabilistic Knowledge Base assisted Question Answering

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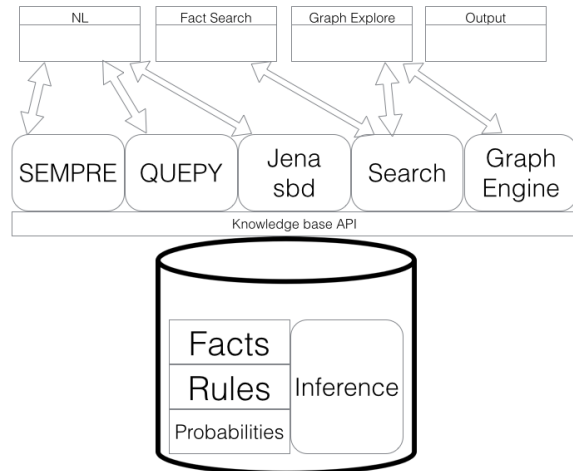


Figure 1: Question Answering system architecture.

ABSTRACT

Abstract

1. INTRODUCTION

Motivate Prob KBs
 Describe Motivation of the the KHop system.
 Give example scenario.
 Introduce the Khop system.
 Describe intro that this demo show real time incremental changes and probability changes to a large KB.

2. SYSTEM OVERVIEW

This demonstration describes a question answering systems designed around a probabilistic knowledge base. In this section, describe each component of the knowledge base

system. We begin with the interface, we describe each of the different methods the users has to interact with with the backend knoweldge base. We then describe the Logic layer that does translation and of user actions to the back end actions. It also allows the user to see the current current status of the system. We also describe the probabilistic knowledge base driving the system. We describe its schema and the integrated functions.

2.1 Interface

The framework is developed using AngularJS to completely compatible with desktop and mobile devices. The interface allows users to make queries using three different modalities. Users will be able to enter natural language questions, search through the set of existing facts, and use a graph to explore connections between graphs. New probabilistic facts and rules can also be added to the system through the interface. Users can also remove or alter the existing facts and rerun queries. The status of queries and the underlying processes are displayed on the main interface.

2.1.1 Natural Language Interface

Describe the purpose tranlation of natual language questions queries. Add the auto complete for previous questions.

We create a service that calls the SEMPRE 1.0 question answering system [1, 2]. This service takes a natural language questions matches against predicates aligned with Freebase. We are then able to generate SPARQL queries to determine the answer of a query.

2.1.2 Fact Search

Describe how facts are searched using the database. Describe how results are ranked. Describe how new results are discovered.

2.1.3 Graph Exploring

Describe D3 visualization of graph and rule display Describe user interaction with graph Describe user selecting facts Describe users removing facts

2.2 Logic

Describe the translation of NL-to-queries using templates (quepy) and also sempre.

Describe how rankings are computed from queries. SEMPRE Returns probabilities, Quepy gives a 0 or 1 probability. We compare the fact pobabilities to the sempre results.

2.3 Knowledge Base

Describe the PostgreSQL database and the other services running on servers. Describe the tables Describe the functions that are called Describe the parallelism

The system is loaded with docker, a system container, so any modifications by demo can be quickly rolled back to the initial state.

3. RELATED WORK

Describe incremental KB from Chris Re

Question answering over freebase [3].

Describe Google Knowledge Vault Describe Fact finding in Google KB Describe Source finding.

4. DEMONSTRATION

Describe the demo setup.

Describe how users will be able to alter parameters.

5. ACKNOWLEDGMENTS

6. REFERENCES

- [1] J. Berant, A. Chou, R. Frostig, and P. Liang. Semantic parsing on Freebase from question-answer pairs. In *Empirical Methods in Natural Language Processing (EMNLP)*, 2013.
- [2] J. Berant, A. Chou, R. Frostig, and P. Liang. Semantic parsing on freebase from question-answer pairs. In *EMNLP*, pages 1533–1544, 2013.
- [3] X. Yao and B. Van Durme. Information extraction over structured data: Question answering with freebase. In *Proceedings of ACL*, 2014.