

Language and Reasoning for Question Answering: State of the Art and Future Directions

Farah Benamara

Institut de Recherche en Informatique de Toulouse
118, route de Narbonne, 31062 Toulouse, France
benamara@irit.fr

Abstract

The research community states that QA systems should support the integration of deeper modes of language understanding as well as more elaborated reasoning schemas in order to boost the performances of current QA systems as well as the quality and the relevance of the produced answers.

Depending on the complexity of the question and the associated passages, more or less complex strategies can be used, such as :

- deep semantic analysis of NL questions such as anaphora resolutions,
- context and ambiguity detection,
- responses to unanticipated questions or to resolve situations in which no answer is found in the data sources,
- models for answer completeness,
- dialogue and interactive QA scenario,
- models for answer fusion from different sources, etc.

We focus in this talk on the role of reasoning in a QA process by answering the following questions: what kind of reasoning capabilities can be used ? on what kind of resources can they be built on ? at what extend they can be used when developing realistic systems ?

Based on the synthesis of the current state of the art, the second part of the talk describes a general typology of inference at different levels: deep semantic analysis of both NL questions and passages, textual

entailment, pragmatic inference and context detection, etc. The related formalisms as well as a description of some current QA systems based on these techniques are also presented.