

The Semantic Score Approach to the Disambiguation of PP Attachment Problem

***Chao-Lin Liu, Jing-Shin Chang and Keh-Yih Su**

Abstract

In a Natural Language Processing System which takes English as the source input language, the syntactic roles of the prepositional phrases in a sentence are difficult to identify. A large number of ambiguities may result from these phrases. Traditional rule-based approaches to this problem rely heavily on general linguistic knowledge, complicated knowledge bases and sophisticated control mechanism. When uncertainty about the attachment patterns is encountered, some heuristics and ad hoc procedures are adopted to assign attachment preference for disambiguation. Hence, although the literatures about this topic are abundant, there is no guarantee of the objectiveness and optimality of these approaches.

In this paper, a probabilistic semantic model is proposed to resolve the PP attachment problem without using complicated knowledge bases and control mechanism. This approach elegantly integrates the linguistic model for semantics interpretation and the objective characteristics of the probabilistic Semantic Score model. Hence, it will assign a much more objective preference measure to each ambiguous attachment pattern. It is found that approximately 90% of the PP attachment problem in computer manuals can be solved with this approach without resorting to any heuristics-based rules and complicated control mechanism. The mapping between the abstract Score Function paradigm and the real PP attachment problem will be addressed in this paper. Future expansion of the semantic score function for resolving general ambiguity problems is also suggested.