Title :
Question Target Classification using Support Vector Machine and Semantic Network

Abstract :
Question classification has a main role in question answering systems. Generally, the task of this section is to assign input questions to preset classes. Question classification has been already done by using machine learning algorithms or the creation of semantic and pattern-based structures. Regarding the importance of question classification in question answering systems, the accuracy and precision of results in previous studies are not desirable, and improvement of these results has always been a matter of concern. By studying the proposed methods and its results, it can be stated that question classification in open domain system will be a challenge, considering the context and target of question and having a proper function on all the defined classes for question. This is because of high number of classes in open domain question answering systems and high degree of variation in questions. On the other hand, the questions include meaning and concepts that extraction of these concepts and using of language processing operations are required for assignment of question to its class. For this reason, the right classification for all classes is one of the most important issues in this area. This research presented a method for classifying questions based on target words. This method consists of two classifier of semantic network and support vector machine. The proposed semantic network method for question classification using the concepts and structure of question. This network is created by a set of questions and used for classification function. Due to using of two semantic network and support vector machine classifiers, their combination is necessary, a method is proposed for result combination too. In this method, each classifiers are weighted. After question class suggestion by classifiers, each weight is calculated and high weighed ones were selected. The proposed method for question classification was implemented and evaluated by using UIUC and TREC-10. This method was able to achieve the accuracy of 93.60 for the coarse-grained grade and 91.00 for fine-grained. The precision of this method for these classes is respectively 91.99 and 89.68. These results indicate that the proposed method is more accurate than other available methods.

Keywords :
Question answering system, Question classification, Support vector machine, semantic network