# QUESTION ANSWERING SYSTEM FOR LIBRARY KNOWLEDGE SERVICE BASED ON TEXT CLUSTERING

**H. G. A. Rajapaksha**

Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka

Department of Statistics & Computer Science, University of Peradeniya, Peradeniya, Sri Lanka

This study is focused on developing a question answering system to guide Library users. This system is a web based solution which captures the knowledge of the experts and shares it among those who seek the knowledge. The system will show the result query of question searched by users from the question base (QB). Question search is the most important part of the system. In our approach, we use data mining technique to match user questions with pre-stored questions in a QB. Through the preprocessing part, the question is decomposed into index terms according to the Porter Stemmer algorithm and forms a words (Index terms) questions (WQ) matrix. A search query is generated by calculating the lowest distance between user question and similar questions in the KB. In this approach, we calculated Euclidian distance between user question and question with its answers as well. Word question matrix is used to calculate the distance. System consists of three methods: (i)user question matching only with each question in the KB (Basic), (ii)user question matching with each pair of question and answer in the KB (Improved) (iii) user question matching with combining two models together (Hybrid). The system was tested on randomly selected 24 questions from the KB and calculated its Mean Reciprocal Rank (MRR) value for above three methods. The results are 0.4154, .3704 and 0.4958 respectively.

The QB of the system is dynamic. The system has the capability of identifying new questions (i.e. no question with the similar meaning is available in the QB). If the system identifies the question as a new question, that question and the answers provided by the experts are automatically added to the QB. This study is focused on the university library domain. However, it can be implemented in any other domain without changing the application. In the course of this process, we have achieved the task of capturing and sharing the tacit knowledge of the experts as well.

*Keywords: Library Knowledge Service, Question Answering System, User Guidance, Knowledge sharing*