The medical professionals and researchers request reliable relevant medical information. But enormous data in the medical domain makes the available medical information sources to suffer from providing these information in a very timely manner. The performance of the retrieval system mainly depends on keyword extraction process. Annotation generation of keywords can offer extra made supply of information to retrieve the documents fitly by addressing upon the synonymy and polysemy problems. There have been several mechanisms available in literature to improve the keyword extraction process, but they lose their completeness due to ambiguity in the medical terms and frequent use of acronyms in the medical domain.

The other factor which influences the performance of retrieval system is ranking function. Once this function is defined by using suitable approach, most relevant retrieved documents can be given more preference while presenting to the user as answer list and thus performance can be boosted. All retrieved documents belonging to medical domain do not have author written summaries. This maximizes the struggle for the user to verify their significance. Therefore, a complete retrieval system must take in summarization techniques so as to assist the users to find whether the retrieved document is beneficial for exhaustive study.

In this study, the methods to improve retrieval accuracy has been proposed and developed by concentrating on various tasks involved in the retrieval process. The research contributions include generating annotated indexing keywords from medical documents by using Wikipedia and medical ontology. As another contribution, a new highly robust hybrid ranking function has been designed for relevance score computation which is capable to capture the essential features of retrieved documents and user query. Also, single medical document summarizers that exploit domain-specific knowledge have been proposed. By using these proposed strategies, good performance improvement can be achieved in the relevant medical document retrieval.