Chapter 5

Results and Discussion

The Primary aim of this research is to present an agent based personalized Web search system, which can help users to get the relevant WebPages based on their selection from the domain list. Thus, users can obtain a set of interested domains and the WebPages from the system. The system is based on features extracted from hyperlinks, user interest domains and past search results. The methodology uses an innovative weighted URL Rank algorithm based on user interested domains and user query. This system uses personalization approach, ONTOLOGY, and semantic based search to generate meaning-full results based on users request. The user feedback (both implicit and explicit) models evaluated in this work increased search effectiveness through query expansion. The ABPSWIRS architecture is tested with different domains like education, e-commerce, and tourism etc.

The system has been tested on a mass with 500 queries from different domain. The domain ontology has also been updated with related concepts of each domains. Using these, the user defined query is converted to semantic query for generous best result. The personalized reranking algorithm is tested with some examples, and compared it to keyword search and semantic un-personalized search.

The experiments conducted take a step towards the advancement of applying personalized retrieval in large scale and various environments. The initial results of the comparative evaluation are promising, showing that
when enough personalized semantic information is available, the precision and average performance of the proposed techniques will improve.

The experimental results suggest that the overhead approach is relatively small. The actual agent based search process takes very little time as shown by the graphs. Moreover the results vary a lot as users are added onto the network. The process is very subjective in that a new user might contribute a lot to the system. Our experiments shows that the probability of good contribution made by such kind of a user is very likely. Still this is a very subjective kind of study where a lot of things depend on the user involved. but based on the above experimental user study the behaviour of the system can be predicted to certain levels.

The evaluation of the results has been done through the precision and recall scores. These parameters along with the F-measure are typically used to measure the quality of the Information Retrieval process as the one proposed in this work. While comparing the precision values of the test data it is observed that more than 90% of the results are having greater values in ABPSWIRS. It implies that the most relevant results are more personalized. The recall value is high in ABPSWIRS for 20 queries among the 15 test queries. It means that from the retrieved list more than 80% is relevant to the user interest where as keyword based search only 60% of the results are relevant. An average comparisons of the performance of the ABPSWIRS over a set of quires show those better precision of personalized search at high recall levels as well as return many relevant documents that the keyword search does not find. However, when the queries get more and more complex, the domain ontology information is to be updated to handle them. So, this framework, a set of opportunities is provided for the developer to design their system according to the user needs. In any case, the framework guarantees to provide the same salability and user friendliness.

As the first application of this architecture, Agent Based Personalized Education System (ABPES) is designed for education domain. Approximately 1 lakh subject keywords and its related semantic meaning were imported in the database of the systems to perform evaluation. ABPES is compared with keyword based search with the measure of precision and recall. It shows that
it retrieves 90% of the relevant result. The Average precision value of ABPES outperforms the keyword based by 85%.

As the second application of this architecture, Agent Based Personalized E-Catalog Service System (ABPESS) is designed with e-business domain. Approximately 500 product keywords, its attributes, and its related semantic meaning were imported in the database of the system to perform evaluation. ABPESS is compared with keywords based search, and with existing e-catalog service system with the measure of precision and recall. It shows that it retrieves 95% of the relevant result. The Average precision value of ABPESS outperforms the keyword based by 89%. Compare to the existing system the searching performance has been increased by 50%. The results of this evaluation show that the performance of the personalized retrieval is improved significantly when compared with the other existing methods. The query expansion with semantic ontology also leads to higher performance.