CHAPTER 6

CONCLUSION

The need of an annotated system for retrieval of learning object has been carried out in an effective way by means providing a semantic description of the metadata of learning objects. The retrieval process is improved by means of expanding the query in a semantic manner. Methodologies to construct query processing and clustering models to group the learning objects based on their categorized concepts is deployed. Prediction of learning object helps the user in knowing the current trends and the future trends of the research topics.

This research focused on implementing a system for annotation of learning objects and expansion of a user query into sub-queries, providing the relevant information needed for the user in a semantic manner. Moreover, the performance of results is analysed using standard measures.

Major contributions of this research are: A new semantic annotation algorithm for a learning object is being proposed. The concepts involved in the learning objects are analysed by means of the presence of master concepts and derived concepts using WordNet. The presence of the concepts of learning objects is also identified by means of index terms. The semantic metadata associated with the learning object explains the importance of various supported concepts and the performance is assessed for different concepts.
The user query is reformulated to support semantics and to fetch relevant documents to the user. Hence, the query is reformulated into various subqueries by referring WordNet ontology. This helped in identifying more relevant learning objects and improving the accuracy of the results. Clustering is applied by means of K-mode clustering algorithms. The performance of the proposed algorithm with its clustering result is being analyzed and verified with respect to the retrieved data. The results showed that the proposed algorithm performed better than the existing algorithms in terms of cluster distance, precision, recall and F-measure. Implementation results are compared with two existing models and observed to be better.

The learning objects are clustered using a fuzzy set algorithm to improve the accuracy. The KFCM algorithm helped in grouping multiple concepts supported by individual learning objects. To analyse the quality of cluster, two measures entropy and purity is used. The results obtained from KFCM clustering is compared with that of the dual processes, namely K-mode algorithm and FCM algorithm. Further, the trend of the learning objects is analysed based on the concepts or topics. The time series data are analysed using ARIMA modeling to predict the future trends of the learning object. The prediction accuracy is also measured as 84.23 % using Mean Squared Error function. The trend analysis provided good results when compared to the existing data.

6.1 FUTURE ENHANCEMENT

Instead of using a window based technique for parsing the documents, the performance of using the corpus-based technique for parsing the learning objects need to be analysed. The length of the user query is tested only for ten words. In future, it can be tested for larger than that and its performance can be measured. In the case of semantic metadata generation,
the metadata needs to be extended to support different metadata standards such as SCORM, COM etc. Synonym problem associated with query reformulation can be further raised to a new research using user defined ontologies. Predicting the trend for various categories of learning objects is done only for a short-term period, the process of training the data for the long term and its impact needs to be studied by employing a different time series algorithm.