7. CONCLUSION

7.1 INTRODUCTION

The chapter will assess the significance of the methodology used in the proposed Hybrid Recommender System and also showcases the results acquired and provided the direction for the future research work. The proposed research work is mainly concerned with the aim of developing the Recommender System framework which will assist to personalize the courses in an e-learning system. The research work makes use of Sem-gram, Nearest Neighbourhood and domain Ontology for efficient information retrieval. Recommender system aims to provide personalized information about courses, products or even services to users and alleviate the challenge of information overload and information retrieval challenges. The recommendations are based on users’ interest, preferences or information needs and thus personalization can be achieved by comparing user query, profiles with items in the repository. In this study, personalized recommender system was designed, implemented and evaluated, focusing on recommending the courses.

The problem that was encountered by individual recommendation approaches during the evaluation was information retrieval. The performance of Recommender System using particular technique may be affected by user queries as the queries given by the users contains those relevant terms that are named with different vocabulary in the database, and this word mismatch makes it difficult to retrieve more relevant information. The propounded system can handle the critical issue concerning the ambiguity and the imperfection of query words and then an appropriate query transformation to retrieve more valid and related information. The results suggest that the performance of the hybrid technique is much better than other individual algorithms in retrieving course information for the recommendation.

After conducting a review of recommender systems literature and other related works, it has been identified that hybridization of techniques enhanced the information retrieval and can improve the effectiveness of the e-learning system.
It also act as a possible solution to mitigate the problems individual recommender systems are facing. In this research, a new way to reformulate user query has developed using classification and expansion method. The developed methodology not only improves the efficacy of course information retrieval but also have more extensive applications than personalized course recommendation system. The research work offers a motivation for basic algorithms to find new applications in the area of recommendation system to provide course personalization to the learners in e-learning system. The proposed system creates personalized information as per learner’s interest and also creates learner ontology to analyze the learner graphically.

The primary objective accomplished by the present research, as shown by the methodology adopted and experimental results, is the approach to recommend course information to learners especially scholars using hybrid technique and the support of ontology. Course ontology is provided as an information model to gain a better understanding of a domain as the ontologies demonstrate the idea that how it can bridge the gap between unstructured courses in the domain. The work presented has developed a new hybrid algorithm based technique to process the learner queries which lead to the enhancement of recommendations by improving the relevant information retrieval. The research study was primarily moved by the growing popularity for a personalized e-learning system. The work also proposes a Threshold Based Nearest Neighbour approach to further strengthen the recommendations by generating similar learners whose interests are the same as the new learner in the personalized learning environment. On the basis of the results obtained it was found that the TBNN approach is performing well as compared to the classical K-NN algorithm to generate the best similar learners. The key issue in K-NN is to agree on the value of k because if it is too low the classification will be susceptible to noise points and if the value of K is high neighbourhood may comprise of data points from other classes. Most importantly if the value of K is not satisfied the new learner will not be able to get the neighbours.

At last the Modified Technology Acceptance Model (TAM) is used to provide experimental outcomes and reveal the feasibility and effectiveness of
course personalization. This TAM model evaluates the user acceptance of recommendation performance attained using the hybrid approach and similar learner generation recommendation. The recommender system will impel the e-learning system to be more efficient by personalizing the courses to an individual learner according to the domain of interest and stipulations. The remaining part of this chapter sketch out the areas for future research work.

7.2 FUTURE WORK

Even though the propound system provides a better quality of recommendations, still there exist certain limitations with the system. In Sem-Gram approach the course recommendation is based on converting a single query into multiple numbers of Semantic queries, and due to various semantic words provides for a single query token, the efficiency of the technique is limited regarding choosing the best synonym term. So, in future, it could be achieved by optimizing the semantic word generation for the query tokens.

Moreover, the role of Ontology in personalization is restricted which is limited to create learner ontology and to check the related courses concerning the courses retrieved after a particular query is executed. The use of ontology should be maximized where the objects could be added or deleted using defined rules and should include other domains as well. There are opportunities to work with Sequential Protocol and Resource Description Framework Query Language (SPARQL) queries to explore the domain ontology in a better way and the complete conversion of the computer science domain for e-learning and mobile learning systems. The similar learner is generated based on learner query and other characteristics which can further be enhanced by using learner query groups to create neighbours. If the limitations mentioned above are mitigated, the recommendation quality will improve much and can improve the learning experience of the learner. Further research need to be done to understand the performance of a particular approach and to understand the mediating reasons for recommendation performance, the domain properties, algorithm behaviour, and user characteristics that will significantly help in generalizing the results to develop a systematic discipline of recommendations.