CHAPTER 7

SUMMARY, CONCLUSIONS AND FUTURE SCOPE

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of the Sub-Title</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. 1</td>
<td>Summary of the Research</td>
<td>131</td>
</tr>
<tr>
<td>7. 2</td>
<td>Conclusions</td>
<td>132</td>
</tr>
<tr>
<td>7. 3</td>
<td>Recommendations for Future Work</td>
<td>133</td>
</tr>
</tbody>
</table>
CHAPTER 7
SUMMARY, CONCLUSIONS AND FUTURE SCOPE

This chapter covers the summary, conclusions made from the work done in this research on dynamic navigation of web query results and better ranking with supervised machine learning algorithm SLOLAR. From the wealth of experience and observations, directions are provided for possible future work. The conclusions are drawn on proposed algorithms aimed at fulfilling dynamic navigation of query results and effective ranking of retrieved documents using improved Page Rank LTR approaches.

7.1 SUMMARY OF THE RESEARCH

Retrieval of highly relevant documents for a web query and providing the appropriate ranking to the retrieved documents are the two crucial aspects of IR with respect to corpora containing millions of text documents. The current academic thinking on information retrieval emphasized the need for new improvements with respect to eliminating irrelevant documents and effective ranking of final results. The research carried out for effective navigation of query results and presentation of results based on ranking score is summarized here. Providing highly relevant results for a given query is the motivation for taking up this research.

As a first step to retrieve relevant documents, the present thesis proposed an algorithm named B-tree based dynamic navigation of query results with Simple Ordinal Classification (SOC). This algorithm used loss function to categorize the web queries and B-tree for efficient navigation queries. The calculation loss function improved the relevancy of results and dynamic navigation using B-tree reduced the number of non-relevant documents (Chapter 3).

Then an improved distance Page Rank algorithm is proposed to rank the retrieved documents. This algorithm is based on structure, content and minimum distance between web pages. It also used session logs to reflect the user intent. This algorithm produced
efficient results with high precision and ranked the documents from highly relevant to least relevant (Chapter 4).

Afterwards, dynamic navigation of B-tree using improved Page Rank algorithm is proposed. This algorithm is based on user search session logs. The proposed algorithm used categorization factor to calculate the relevancy of a query to the specific category. The usage of B-tree for dynamic navigation of web queries reduced the navigation time while processing a query. The usage of improved distance Page Rank algorithm sorted the above-resulted documents efficiently. Our proposed approach for categorization and ranking of web queries is conversant, and it retrieved more relevant web pages (Chapter 5).

A new algorithm named Scalable List wise Online Learning Algorithm for Ranking (SLOLAR) is proposed. It overcomes the scalability problem of improved Page Rank and conventional LTR algorithms. It resulted in better performance over its counterparts using benchmark datasets. The algorithms proposed in this research can be used for improving the performance of search engines. This algorithm provided highly relevant results by reflecting user intent, while processing user queries related to textual or web documents retrieval (Chapter 6).

7.2 CONCLUSIONS

The author of this thesis proposed algorithms for improvements in information retrieval process. A B-tree based dynamic navigation of query results with Simple Ordinal Classification (SOC) was proposed by computing loss function which resulted in reducing the number of irrelevant documents. An improved distance Page Rank algorithm is proposed which ranked these retrieved documents in the descending order of their ranks. The synergic effect of dynamic navigation of query results using B-tree and improved Page Rank algorithm is used which minimized irrelevant documents and provided a more appropriate ranking. Then LTR based ranking algorithm named SLOLAR is proposed with underlying machine learning mechanism with listwise LTR approach. It is meant for highly
relevant document retrieval with optimized ranking besides achieving scalability as the algorithm updates ranking model without rebuilding it.

### 7.3 RECOMMENDATIONS FOR FUTURE WORK

Having understood the results of the research carried out with various algorithms for dynamic navigation of query results, the following are the directions for future work.

- One important direction for future enhancement is to investigate further on the idea of using SLOLAR combined with B-tree for more efficient means of retrieving and presenting web documents.
- As there is an exponential growth of data in the real world, traditional approaches are inadequate to process such data known as big data. Therefore, it is an exciting direction for future work to update algorithms that support new programming paradigm known as MapReduce.
- Another direction for future work is to investigate LTR process for streaming applications where short text documents are streamed. Applying LTR for such documents is an interesting research area which is little explored.