Chapter 6

Conclusion and Future Scope

6.1 Conclusion

This chapter summarizes the main success of this research work and discusses an about future research work to achieve the ultimate goal in the field of performance of web accessibility, web security, load balancing and collective intelligence. An in depth literature survey was carried out and the critical analysis of the same raised the following major shortcomings and challenges in the web-centric query optimization techniques.

- Network is congested due to heterogeneous data (i.e., text, images, videos etc), heavy weight of web applications and repetition of queries. Due to these problems the access time of web applications is very high, which reduces the overall performance of the web.
- Web-centric queries are neither efficient nor secure.
- Huge information is available on the servers but the load on servers is not still balanced. In industry the developers distribute the huge information of servers by introducing more servers which produce requirement of the collective intelligence. Further, to search the efficient and relevant server is also a big challenge.

The diagnostic thought to above challenges guides towards the design of following efficient approach, model and frameworks:

- **Portable Extended Cache Memory to Reduce Web Traffic (PECA)[24]**

  In this approach, it is desired to conserve the heavy data at the client side. The experiments were performed on few dummy web sites of different sizes while saving
heavy data at client side. Difference in the access times of different web sites via traditional method and with the proposed approach was compared.

A major improvement in the access time was observed in contrast to that by using traditional methods. Also, an attempt was made to reduce server load and network traffic congestion and it actually resulted into reduction of response time and hence an improved web performance could be observed.

- **Secure Web Access Model for sensitive data (SWAM) [47]**

  SWAM in the context of biometric recognition is being proposed. The proposed security model SWAM provide an interface to the authorized user’s and reduce the threats regarding their sensitive areas. Online web services will be more secure using the online SWAM.

- **Collective Intelligence based Framework for Load Balancing of Web Servers [48]**

  Collective Intelligence based Framework for Load Balancing of Web Servers is being proposed. The aim of this work is to find the overall best server with shortest path and hence online balancing of web servers could be achieved with the help of collective intelligence based framework for online load balancing.

  The proposed concept is an extension of, rather than a replacement for, traditional exploration process.

6.2 Future Scope

The work covered in the thesis tries to solve various issues, which emerged as a result of literature survey. Still there are many unopened questions left and are of interest were identified and are mentioned below:
➢ **Web Security At Client Side**

In this research work we proposed PECA, but it still has shortcomings. For example, when web document is required to be save in the portable extended memory it reduces the security due to decentralization of data. During updates at client side malicious codes may transfer to the client machine. So, a web security framework is required at the client side to make PECA more secure and better performer. So in near future, PECA and SWAM may be merged.

➢ **Server Side Load Balancing**

Load balancing is a concept which is still under research. Everyday new frameworks, algorithms and models are being developed and existing models are updated. There is a vast scope for future enhancement. For example, the users are sending arbitrary data as a query on the web, and hence web-centric queries can be optimized at server level to reduce server load to improve the server performance. Further, implementation of our work is pending and hence an improvement may be recommended in the same.

➢ **Ant Based Technology for Collective Intelligence At Server Side**

The developers are distributing server’s data to reduce the server’s load. This mechanism is increasing the requirement of collective intelligence. In this research work, ant technology for collective intelligence is used, but this is framework is based on client’s query. There are still many unopened questions. For example, what and how much data is available in near servers? Are these servers are reliable? What is the credibility of these servers? In particular the server must have all the relevant information of their relative servers.