## Acknowledgements

"The hardest arithmetic to master is that which enables us to count our blessings."

-Eric Hoffer (1898-1983)

Successful completion of any task gives great satisfaction and internal strength regarding future problems, but at any stage, a person never exists alone. He or she accompanied by some people who provide support and suggestion for successful completion of any work. Though only my name appears on the cover of this thesis, so many great people have contributed to its production. I owe my gratitude to all those people who have made this thesis possible and gave their kind-hearted support at every stage of my research work.

I take this opportunity to express my profound gratitude and deep regard to my supervisor Dr. Sukomal Pal, Assistant Professor, Computer Science, and Engineering Department, IIT(BHU), Varanasi for his exemplary guidance, monitoring and constant encouragement throughout the course of this thesis.

I would like to express my sincere thanks to Prof. Rajeev Srivastava, Head, Computer Science and Engineering Department, for his kindness and valuable support in carrying out the research. I am enormously grateful to all the members of my Research Program Evaluation Committee, Dr. Anil Kumar Singh, Dr. Sandeep Ghosh, Dr. Sukomal Pal, and DPGC Convener Dr. Prateek Chottopadhyay for their valuable suggestions, appreciation, and encouragement. I would like to convey my sincere gratitude to the other faculty members of the Department of Computer Science and Engineering, Prof. K.K Shukla, Prof. A.K Tripathy, Prof. S.K Singh, and Dr. Vinayak Srivastava for their extensive and inspiring guidance throughout this tenure.

I am obliged to Prof. Subhash C. Sharma, Department of Electronics & Computer Engg. Discipline, IIT Roorkee, Saharanpur Campus, U.P, India, for his sincere guidance and the encouragement that he gave me to carry out this research work.

A very special gratitude goes out to my colleagues and friends with special mention to Mr. Sushant Kumar Pandey, Mr. Shivang Agarwal, Mr. Ashish Gupta, Mr. Anshul, Mr. Ashish Kumar Sharma, Mr. Ashwini Kumar Singh, Mr. Nigmendra Pratap Yadav, and Mr. Supriya Chanda for being great friends and the best advisors I could ever have. Their advice, encouragement, and critics were always sources of inspiration. This thesis would not have been possible without their invaluable remarks and persistent help. My heart filled thanks to my lab mates Mr. Sushil Kulkarni, Ms. Anitha Saroj, Mr. Siba Sankar Sahoo, and Ms. Akanshya Mishra. We really enjoyed our discussions, which spanned on every topic under the sun other than academics. I wish to extend my gratitude towards other department friends, particularly Mr. Ankit Kumar Jaiswal, Mr. Chintoo Kumar, Mr. Randheer Bagi, Mr. Amit Kumar, Mr. Saurabh Arora, Mr. Nirbhay Kumar Tagore, Mr. Amit Biswas, Mr. Ramakant Kumar, and Mr. Santosh Kumar Tripathy.

I extend special thanks to the non-teaching staff in the department, particularly, Mr. Ravi Kumar Bharti, Mr. Ritesh Singh, Mr. Shubham Pandey, Mr. Prakhar Kumar, Mr. Manoj Kumar Rai, Mr. Viplav Biswas, and Mr. Akhilesh Kumar Pal.

My acknowledgments would not be complete unless I express my heartfelt gratitude and deepest appreciation to my parents, my brother, my sisters and all my family members and friends for their blessings, support, love, encouragement, and sacrifices, without which this assignment would not have been completed at all. I am grateful to my other family members who have supported me along the way.

Finally, I bow in great reverence to almighty God, the most gracious, the most merciful, whose bounteous blessings enabled me to accomplish this thesis.

Date: \_\_\_\_\_

Tribikram Pradhan