ACKNOWLEDGMENTS

At the outset, the author of this research would like to express his sincere thanks to the God Almighty for his constant love and grace showered on him and making his life a worthwhile to the nation.

The author owes his gratitude to supervisor Dr Kiran Kumar Ravulakollu of Sharda University for his guidance in the research work. He would also like to express his sincere gratitude to Late Dr Pervez Ahmed who was his first supervisor and introduced the author to the key concepts of this research. Without his guidance the research in this area would not have been started. His magnanimity is stunning. Being a staunch believer in perfection he always rendered unremitting and scintillating support.

The investigator is greatly indebted to Dr A K Soni, Professor and Dr Ayoub Khan, Associate Professor, Department of Computer Science and Engineering, for all the hopes vested in him for the very thought of this research.

The author is also greatly indebted to Dr Bhaskar Bhattacharya for his timely guidance in drafting the final version of the thesis by offering suggestions for improvement which is of inestimable value. He is also thankful to Dr R K Jatley, Dean, School of Engineering & Technology, for extended support throughout the work.

The researcher expresses his appreciation to Dr R M Mehra, Dr N B Singh and the members of the Research and Technology Development Centre, Sharda University for their co-operation throughout the study.

The researcher feels that he would fail in his duty if he does not thank the HOD, Dr Ishan Ranjan and all the staff members of Department of Computer Science and Engineering, School of Engineering and Technology, especially Mr. T P Singh, Mr. Sudeep Varshney and Mr. G S Mishra for their cooperation and wishes.

The author renders his heartfelt thanks to his parents and family who spared no pains in their efforts and raised him with love and support in all pursuits without which he could not have scaled to these heights.

If by mistake, the author has failed to thank anyone, who has slipped from his memory, he offers his humble apologies, and renders his heartfelt thanks.

ASHOK KUMAR SAHOO