ACKNOWLEDGEMENTS

No research endeavour is ever carried out in solitude. Completion of this doctoral thesis was possible with the support of several people. I would like to express my sincere gratitude to all of them.

First and foremost, I'm extremely indebted to my distinguished guide and supervisor, Dr. Nasib Singh Gill, Professor, Department of Computer Science and Applications, Maharshi Dayanand University, Rohtak - 124001, (India) for his valuable guidance, scholarly inputs and consistent encouragement I received throughout the research work. This feat was possible only because of the unconditional support provided by him. A person with an amicable and positive disposition, he has always made himself available to clarify my doubts despite his busy schedules and I consider it as a great opportunity to do my doctoral programme under his guidance and to learn from his research expertise.

I would like to thank Dr. Ekta Walia (Associate Professor, Department of Computer Science, South Asian University, New Delhi - 110021, India), Dr. Rajender Nath (Professor, Department of Computer Science & Applications, Kurukshetra University, Kurukshetra - 136119, India), and Sh. R.K. Kamra (Senior Vice-President, JK Technosoft Ltd., Noida - 201301, India) for providing moral support, encouragement, and consultations during the course of study.

I’m also thankful to all faculty members, research scholars, and staff members of Department of Computer Science and Applications, Maharshi Dayanand University, Rohtak – 124001 (India) for their time-to-time encouragements and continuous support.

Thanks to all the great friends and colleagues I’ve met earlier and particularly in the past couple of years for making it such an enjoyable experience.

I’m deeply indebted to my parents, who encouraged and helped me at every stage of my personal and academic life, and longed to see this achievement come true. I’ve neglected some of duties towards them and appreciate their tolerance even in worst circumstances. On the contrary, they have always been a source of inspiration and consolation for me. I deeply miss my grandparents, who are not with me to share this joy.
Further, I'm thankful to Sh. Gian Singh Sabharwal and his family for providing support and encouragement throughout my life.

Above all, I owe it all to Almighty God for granting me the wisdom, health and strength to undertake this research task and enabling me to its completion.

Narender Singh