Acknowledgements

First of all, my sincere and wholehearted gratitude to my supervisor Dr. Santosh Kumar, Department of Computer Science and Engineering for his unfading guidance, persistent support and motivation throughout my research work. This research work is a result of his unrelenting encouragement, knowledgeable thoughts, and motivational care. His inspiring supervision and experience helped me a lot during the research study, thesis writing, and presentation of this thesis.

It is my pleasure to express my gratitude to Prof. (Dr.) Kamal Kumar Ghanshal, Hon’ble Chancellor, Graphic Era University, Dehradun for encouraging and providing the resources and facilities of the department to conduct this research work.

I express my profound gratitude and immense gratefulness to Prof. (Dr.) R. C. Joshi, Hon’ble Advisor, Graphic Era University, Dehradun for his sagacious suggestions, ever lasting inspiration, and deep interest in my research work.

I am very thankful to Dr. Bhasker Pant and Dr. R. Gowry for their continuous evaluations and fruitful advices during all my research tenure.

I am grateful to Dr. Shashidhar Koolagudi for his guidance and constructive ideas in the early phases of my work. He enriched me with his knowledge about various tools which I had used in my research. I am also thankful to Dr. Devesh Pratap Singh for his support and suggestions.

I am also grateful to Prof. Dibyahash Bordoloi, and Prof. (Dr.) S.C. Dimri for their academic, administrative and moral support during my research work. I thank to all my dear colleagues who helped me unconditionally and selflessly during my research work. I am grateful to Lab Administrator, CS/IT, Mr. Girish Devshali and his team members for their support in provisioning and assistance in laboratories.

I thank from the bottom of my heart to my father, Dr. A. N. Tiwari and my mother, Mrs. Vidya Tiwari for their blessings and continuous support throughout my life. Last but not the least, I express my deep sense of appreciation to my wife, Mrs. Ujala Tiwari and my son, Kaustubh for their unconditional love, support and care.

Umesh Kumar Tiwari