Acknowledgements

I would like to convey my sincere gratitude to my guide, Dr. Shyamanta M. Hazarika, Professor, Dept of Computer Sc and Engineering, Tezpur University (TU), whose guidance and insightful suggestions helped me in all aspects of my research. I really learnt the art of visualization and approach of a solution of a complex problem from him. The dissertation would also have been incomplete without the assistance of my co-supervisor, Dr. Snehashis Mukhopadhyay, Professor, Dept. of Computer and Information Sciences, Indiana University-Purdue University, Indianapolis. I would also like to thank Dr. Utpal Sharma, HOD of Computer Science, TU, for the assistance offered during the period of investigation. I would also like to thank Prof. Malay Dutta, Prof. D.K.Bhattacharyya, Prof. D. K. Saikia, Prof. Nrityanand Sharma, Prof. Sarat Saharia, Sr. Lecturer Bhabesh Nath, researcher Juwesh Binong, Achintya Sharma, Nayan Kakoty and Sajid Nagi, and my previous employers and colleagues for the help and support extended at various stages of my research. I appreciate the suggestion provided by my colleague Mr. Manoj Jain to crack certain programming intricacies which arose at the initial stages. I am grateful to my M.Tech students who took my courses on Data Mining and Warehousing, and Soft Computing which helped me to enhance my knowledge in the area. I would also like to acknowledge all the authors of the articles and the books and other reference material listed at the end.

I appreciate the work of the Machine Intelligence Unit of Indian Statistical Institute, Kolkata for the various schools they had organized and in which I had participated. I am thankful for the fruitful discussions I have had with many of its researchers and others at various stages of my work, and also acknowledge the Center for Soft Computing Research: A National Facility at Indian Statistical Institute, Kolkata for allowing me to visit their Center and utilize the resources therein. Technical Assistant Ajay of Computer Sc. dept, TU has been ever helpful in certain technical matters as has been the staff of the TU CSE dept office. Saurabh Sharma and Rosy Das, Assistant Professor at CSE dept, TU, demonstrated their methodology of handling clustering schemes when I was struggling during the coding phase which proved helpful....

I would also like to say ‘thank you’ to my family, colleagues and friends for their patience and support. Last, but certainly not the least, my six and a half year old son, Amartya Vishnu Ghosh
(Bonbon), for whom I have promises to keep and whether I walk a few yards before I sleep is something only the future will unfold and posterity will judge...

I would be happy if the present work is of some significance to anyone exploring the fascinating world of clustering and optimization and it’s far reaching impact in our everyday life.