Acknowledgement

This Ph.D. thesis is an investigation on m-polar fuzzy graphs and applications. It would not be completed without the support of many people. I owe much to them and would like to take the opportunity to thank them for their encouragement and support.

It is indeed a pleasure to express my deep sense of gratitude, regards and heartfelt appreciation to my research supervisor **Professor Madhumangal Pal**, Department of Applied Mathematics with Oceanology and Computer Programming, Vidyasagar University, West Bengal, India for his advice and guidance. His perpetual inspiration and philosophy give me an enjoyable experience not only in the journey of research but it will also be memorable in future life.

Words cannot express my gratitude towards all my friends. Especially, I am thankful to all my teachers Prof. Shyamal Kumar Mondal, Prof. Sankar Kumar Roy, Prof. Dilip Kumar Maiti, Dr. Ganesh Ghorai and Dr. Raghu Nandan Giri for their continuous encouragement on completing my thesis.

I am also thankful to all my co-researchers Dr. Sankar Sahoo, Dr. Ganesh Ghorai, Miss Sreenanda Raut, Mr. Tanmoy Mahapatra, Dr. Sovan Samanta, Dr. Satyabrata Paul, Dr. Asit Dey, Dr. Tarasankar Pramanik, Dr. Tripti Bej and other friends who provided me with a friendly environment.

I would also acknowledge my gratitude and appreciation to all the staff of the Department of Applied Mathematics with Oceanology and Computer Programming, Vidyasagar University for their kind help in various stages and also indebted to the University for support and giving me the opportunity to use the equipment to carry on my research work. I am also grateful a substantial debt to all the members of the Doctoral Scrutiny Committee for their valuable suggestions time to time and encouragement. I extend my gratitude to the University authority for providing me all the facilities needed for successful completion of this work.

Collective and individual acknowledgements with sincere appreciation are also owed to my friends Mrs. Neha Pal, Miss. Tanuka Chattaraj, Mr. Jishu Jana and others whose presence is somehow perpetually refreshing, helpful and memorable.

It is a pleasure to express my gratitude whole-heartedly to my family. My father deserves special mention for his constant support, prayer and showing me the joy of

intellectual pursuit ever since my childhood. My mother is the person who put the fundamentals of my learning character. My brother Mr. Animesh Mandal supports me all the time. He inspires me to concentrate on research work all the time. I feel great reverence for all my other family members and relatives for their blessings.

I would like to thank everybody who was important to the successful realization of the thesis, as well as expressing my apology that I could not mention personally one by one.

I am also grateful to the Editor-in-Chiefs of the journals of 'Journal of Intelligent and Fuzzy Systems', 'TWMS Journal of Applied and Engineering Mathematics', 'Neural Processing Letters', 'Journal of Multivalued Logic and Soft Computing', 'Soft Computing' for publishing my research papers.

Finally, I would like to thank the authors of the articles from which I learned a lot and applied these knowledge to write this thesis.

Date: (Sonia Mandal)