ACKNOWLEDGEMENT

The author is very grateful to the **Vice-Chancellor** and **Research Coordinator**, Manonmaniam Sundaranar University, Tirunelveli, and **Dean (Academic)**, National Institute of Technology, Tiruchirapalli, for permitting him to undertake this research.

In the first place, I would like to record my gratitude to **Dr.S.G.Ponnambalam**, Associate Professor, Monash University, Malaysia for his supervision, advice, and guidance from the very early stage of this research as well as giving me extraordinary experiences through out the work. Above all and the most needed, he provided me unflinching encouragement and support in various ways. His truly scientist intuition has made him as a constant oasis of ideas and passions in science, which exceptionally inspire and enrich my growth as a student and researcher. I am indebted to him more than he knows.

I gratefully acknowledge **Dr.N.Jawahar**, Professor, Thiagarajar College of Engineering, Madurai for his advice and crucial contribution. His involvement has triggered and nourished my intellectual maturity that I will benefit from, for a long time to come. Sir, I am grateful in every possible way and hope to keep up our collaboration in the future.

Many thanks go in particular to **Mr.A.S.Ramkumar**, Principal, Maharaja Prithvi Engineering College, Coimbatore. Ram. I am much indebted to you for your valuable advice in discussion and furthermore, using your time to read this thesis and gave your critical comments.
I have also benefited by advice and guidance from Mr. S. Chandrasekaran who kindly granted his time for even answering simple questions. I received motivation; encouragement and support from him during all my studies. With him, I have learned writing papers for journals and sharing my ideas. I also want to thank example, motivation, inspiration, and support I received from him.

My Father, in the first place is the person who put the fundament of my learning character, showing me joy of intellectual pursuit ever since I was a child. My Mother is the one who sincerely raised me with her caring and gentle love. Thanks a lot Dad and Mom. My grand mother deserves special mention for her inseparable support and prayers. Rangesh thanks for being supportive and caring sibling. I extend my wishes to express my love and gratitude to my brother’s family for their understanding & endless love, through the duration of studies.

Words fail me to express my appreciation to my wife whose dedication, love and persistent confidence in me, has taken the load off my shoulder. I owe her for unselfishly let intelligence, passions and ambitions collide with mine. Therefore, I would also thank my in-laws family for letting me take her hand in marriage, and accepting me as a member of the family, warmly.

I have worked with a great number of people whose contribution in many ways to the research and the making thesis deserved has a special mention. Without their support, it would be impossible for me to finish my work. That is why I wish to dedicate this section to recognize their support. It is a pleasure to convey my gratitude to them all in my humble acknowledgment.