I am thankful to the administrators of Anna University, especially Dr. D. Viswanathan, Vice-chancellor and Dr. P. Kanagasabapathy, Dean, MIT for giving me an opportunity to work as a teaching research associate and for all the help they rendered in carrying out my research work.

I would like to express my heartfelt gratitude to my supervisor Dr. V. Vaidehi for being a great source of inspiration and encouragement. Working with her, I gained some truly invaluable lessons in my life.

I take this opportunity to thank the members of the doctoral committee Dr. V. Ramachandran and Dr. S. Shanmugavel for their constant support and invaluable suggestions.

I would like to thank the staff members of Information Technology, MIT and fellow researchers in the parallel processing lab for their timely help at different stages of my stay at MIT.

I am thankful to Nathan Eagle, Suttipong, Levitin and Snell for their timely help and useful suggestions.

Finally, I would like to thank my parents, wife and all members of my family for their encouragement, support and prayers without which this would not have been possible.

M.S. SRICHARAN