ACKNOWLEDGEMENT

First and foremost the author is highly indebted to express heartfelt thanks to his supervisor, Dr. Arthanari M, Dean, Department of Science and Humanities, Nehru Institute of Technology, Coimbatore for mentoring over the past six years. His natural ability to point towards to identify key research problems, solving social, technological problems helped me to polish my own ideas. His approach in research with project management skills derived most of our research group members to accomplish targeted results in time. He is very much instrumental in completing this piece of work and my ability to present my ideas effectively.

The author is grateful to Dr. Punithavalli M, Director and Head, MCA Department, Sri Ramakrishna Engineering College. Coimbatore and Dr. Sivaraj D, Professor and Head, Department of Mathematics, GKM College of Engineering and Technology, Chennai for serving on my Ph.D Doctoral Committee and for their incessant monitoring, advice, ideas, continuous support, guidance, persistent motivation, encouragement and valuable suggestions.

The author is obliged to the Management of Nehru Institute of Technology, Coimbatore, and Sri Venkateswara College of Computer Applications and Management, Coimbatore and Applied Materials India Private Limited, Chennai and Tata Power Solar Systems Private Limited, Bangalore, for providing necessary facilities to accomplish research work.

The author is thankful to his friends, family members and his research group. Also I thank God for granting patience and perseverance.

SIVAKUMAR .M