ACKNOWLEDGEMENT

I sincerely express my deep sense of gratitude to my research supervisor **Dr. T. THYAGARAJAN**, Professor, Department of Instrumentation Engineering, Madras Institute of Technology campus and Director - University Library, Anna University, Chennai, for providing me an opportunity to carry out this research work under his able guidance and efficient supervision. His continuous care, excellent guidance, untiring help and constant encouragement helped me to bring out this research work in successful form.

I am extremely thankful to the members of the Doctoral Committee- **Dr. S. SHANMUGAVEL**, Registrar, Anna University, Chennai & Professor, Department of Electronics & Communication Engineering, College of Engineering, Guindy, Anna University, Chennai and **Dr. C. CHANDRA SEKHAR**, Professor, Department of Computer Science Engineering, IIT Madras, Chennai who had immensely helped me with their valuable suggestions and comments.

I express my whole hearted thanks to **Dr. K. BHOOPATHY BAGAN**, HOD and all the teaching and non teaching staff members of the Instrumentation Engineering Department, Madras Institute of Technology campus, Anna University, Chennai for their kind encouragement in carrying out this research work.

I am grateful to all my family members in general and to my husband **Mr. V. RAMAKRISHNAN** in particular, for the support, cooperation, encouragement and help in all my endeavours.

**SABITHA RAMAKRISHNAN**