ACKNOWLEDGEMENT

The author wishes to express sincere gratitude to his thesis supervisor Dr. G. Gurusamy, Professor and Dean, Electrical and Electronics Engineering, Bannariammman Institute of Technology, Sathyamangalam for his encouragement, magnanimous support, meticulous guidance, that materialized the research work more fruitful.

The author wishes to express his sincere thanks and gratitude to Mr. G. T. Soundrapandiaraaj, Correspondent, NPA Centenary Polytechnic College, Kotagiri for his constant encouragement and valuable advice throughout the research.

The author wishes to thank to Dr. A. Shanmugam, Principal Bannari Amman Institute of Technology, Sathyamangalam for giving him a chance to carry out his research work and for providing the facilities, support and help throughout the research work.

The author wishes to express gratitude to the Doctoral Committee members Dr. K. Thanuskodi, Director Akshaya College of Engineering and Dr. Jovithajerome Professor and Head, Instrumentation and Control Engineering PSG College of Technology for their valuable suggestions.

The author deeply indebted to Guru Ragavendra for his abundant blessings on him throughout this work. Words are not adequate to express his gratitude to his parents, wife and children for their compassion and constant encouragement with extraordinary patience.

SANKARA SUBRAMANIAN A