Acknowledgement

Research may be the work of an individual person but it involves efforts of a number of people who work towards the initiation of an idea and subsequently transforming it into a complete thesis. Undertaking this Ph.D. has been a truly life-changing experience and I take this this opportunity to acknowledge my debt to the professors, family, friends and everyone who has supported and encouraged me throughout this process.

A guide is a person who gives direction to the idea and help in shaping it into a meaningful work. First and foremost, I would like to express my immense gratitude to my supervisor, **Prof. S. K. Nagar**, who has given me a platform to work on by providing one of the areas of great potential in research. He has been a locus for improvement of the work through his dedication, patience, stimulating suggestions and discussions, motivated me to improvise and come up with different ideas.

I am sincerely thankful to **Prof. D. Singh**, Head of the Department of Electrical Engineering for allowing me to use the available departmental facilities during the course of the thesis work. I would also like to express my deep gratitude to **Dr. S.R. Mohanty** who through his guidance, enthusiastic encouragement and useful critiques of this research work has been a constant force in improving the quality of the research. I am also grateful to my RPEC members, **Dr. Sandip Ghosh** and **Dr. Anil Kumar** for their contributions of time and ideas to make my Ph.D. experience productive and stimulating. The enthusiasm and helpful attitude of all the faculty members of the Department of Electrical Engineering for research was contagious and motivational for me, even during tough times in the Ph.D. pursuit. I would also thank all the Control System lab staff and Systems lab staff for their kind cooperation during the course of the work.

Lastly, I would like to thank my family for all their love and encouragement. I feel

lucky to have parents who raised me with a love of science and supported me in all my

pursuits, my in-laws for their motivation and my loving husband who supported me in

every possible way to reach the successful completion of the work. I wish to express

indebtedness to them, for their unconditional love, extreme patience and constant support

over the years.

Above all, I owe it all to Almighty God for granting me the wisdom, health and

strength to undertake this research task and enabling me to its successful completion.

Date: 26/03/2019

Mudita Juneja