

Acknowledgment

Undertaking this Ph.D. has been a truly life-changing experience for me and it would not have been possible to do without the support and guidance that I received from many people. First of all, I owe it Lord Shiva for calling me to the holy and ancient city Varanasi and granting me the wisdom and strength to undertake this research task and enabling me to its completion.

Foremost, I would like to express my sincere gratitude to my supervisors **Prof. Ranjit Mahanty** and **Dr. Rajeev Kumar Singh** for the continuous support of my Ph.D. study and research, for their motivation, enthusiasm, and immense knowledge. A person with an amicable and positive disposition, my supervisors have always made them available to clarify my doubts despite their busy schedule and I consider it as a great opportunity to do my doctoral program under their guidance and to learn from his research expertise. Their guidance helped me in all the time of research and writing of this thesis. I could not have imagined having such better supervision and mentors for my Ph.D. study. Thank you, Sir, for all your help and support.

Besides my supervisors, I would like to thank the members of my research progress evaluation committee: **Prof. Satyabrata Jit**, Professor, Department of Electronics Engineering, **Dr. Santosh Kumar Singh**, Associate Professor, Department of Electrical Engineering, for their encouragement, insightful comments, suggestions and hard questions in various presentation during my research work tenure. I am grateful to the reviewers whose constructive suggestions and invaluable advice improved the quality of my publication derived from this work.

I would like to acknowledge **Prof. Devendra Singh**, Head of the Department of Electrical Engineering, for his help on various occasions. I would like to thank **Dr. Vivek Nandan Lal**, Associate Professor, Department of Electrical Engineering, for his support and valuable suggestions on various situations. Moreover, I am highly obliged to owe my sincere thanks to the technical, non-technical and administrative staff of the Electrical Engineering department, who helped me in in all possible ways during the work.

I have to thank many people who are part of my Ph.D., my juniors, seniors, friends and well-wishers. It is very difficult to mention their names here because of a long list. I want to thank them with utmost honesty because without them it is not possible to reach this point.

Finally, I wish to express my hearty gratitude to my mother Niharika Bal, who always encourages and lets me pursue what I like. They are wonderful and sacrifices a lot so that I can focus on my research; for that, I am infinitely grateful to them.

(Abhinandan Routray)