ACKNOWLEDGMENTS

This thesis is compiled with the effort, help, and support from both students and lecturers. I would like to express my deepest gratitude and thanks to:

- 1. My beloved parents, brother and sisters for endless love, prayers, and supports: Mr. Ruslan Dalimunthe, Mrs. Nasiyah, Mr. Ucok Sapalas Dalimunthe, Ms. Elsa Juwita Dalimunthe and Ms. Rahmawati Dalimunthe.
- 2. Mr. Erwin Susanto, Ph.D. as the supervisor and Mr. Kharisma Bani Adam, Ph.D. as co-supervisor for the cooperation, contribution, help, and guidance in this thesis. Thanks for all the excellent and valuable advice input.
- 3. Thanks for all the excellent and valuable advice input from Mr. M. Zakiyullah R., Ph.D. as the chairperson of the Jury and Mr. Dr.Eng. Willy Anugrah C. as the jury's member.
- 4. The entire lectures and employees (Mr. Ruddie & Mrs. Gia) of the Departement of Electrical Engineering, Postgraduate Telkom University, on the knowledge, guidance and assistance for the author to finish composing this thesis.
- 5. All of my closest friends, for the presence, time, help, positive vibes, and supports that always accompany the author's steps in completing this thesis. Especially for Alm. Rizki Ismail, Hagi, Ika, Nia and my beloved brother & sister in Bandung Mr. Ardath and Mrs. Tia.

May all goodness be blessed with kindness and Allah SWT's protection forever.