

## ACKNOWLEDGMENTS

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

1. Allah Subhanahu wa ta'ala, we praise Him, seek His help and ask for His forgiveness.
2. My beloved parents, for endless love, prayers, and supports, Mr. Mudjianto and Mrs. Sutrisni.
3. My beloved sister, Dinnar Tasmulaylisyah for being author's biggest supporter that makes the author struggling to finish this thesis.
4. Dr. Eng. Khoirul Anwar, S. T., M. Eng., as the supervisor, who had guided and assisted the author in writing and finishing the research, taught the author regarding a whole thing about research, especially the importance of prioritizing quality of every research.
5. Dr. Aloysius Adya Pramudita, S.T, M.T., as the cosupervisor, for the cooperation, contribution, help, and guidance in this thesis.
6. The University Center of Excellence for Advanced Intelligent Communications (AICOMS) family, which has become the second author's family in campus. Thanks for all the happiness, the sadness, the craziness, many helps and support in undergoing to finish the thesis.
7. The entire faculty and employees of the Department of Electrical Engineering, Master Program of Telkom University, on the knowledge, guidance and assistance for the author to finish composing this thesis.
8. All member the Bedjo Big Family, for motivation and any time to play online game when the author is restless to completed the Master's Thesis.