

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. The sake of Allah, my Creator and my one only Lord.
2. The One and Only. My great teacher and messenger, Mohammed (May Allah bless and grant him), who taught us the way and purpose of life.
3. Prof. Dr. Adiwijaya for his help, support, patience, and immense knowledge. He always gives valuable advice and guidance during this research and writing this thesis.
4. The directors, lecturers, the academic and technical staff of Telkom University, especially for Graduate School of Informatics Engineering who have provided all the necessary support at the master program.
5. My company and my team in Expert Course
6. Telkom University, my second home. The place which is full of knowledge, experience, and challenge.
7. My friends who encourage and support me.