

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my principal supervisor Ari Moesriami Barmawi, Ph.D for her continuous support of my master program and related research, for her patience, motivation, and immense knowledge. Her guidance helped me during conducting this research and writing this thesis.

I would like to thank to all of directors, lecturers, and academic and technical staffs of the Telkom University, Indonesia especially the Graduate School of Informatics Engineering who had provided the necessary support the master program. I thank my fellow in residency room and classmates for the stimulating discussions, for the sleepless nights we were working together before deadlines, and for all the fun we had in the last two years.

Finally, I must express my very profound gratitude to my parents and sister for providing me with unfailing support and continuous encouragement throughout my years of study and writing this thesis. This accomplishment would not have been possible without them. Thank you.

Best regard!

Aprianti Nanda Sari