

## 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. Allah SWT, the most gracious and the most merciful, or His endless blessings, guidance, and strength throughout this journey.
2. My family, for their unwavering support, patience, and love, which provided me with the strength to complete this thesis
3. My thesis advisor, Isman Kurniawan, S.Pd., M.Si., M.Sc., Ph.D. for their invaluable guidance, continuous encouragement, and insightful feedback throughout the research process.
4. All the lecturers and staff of the School of Computing, Telkom University, for their knowledge and service throughout my master's studies at Telkom University.
5. My xixi bestie, for their assistance, whether it be through sharing knowledge, providing resources, or offering moral support, helping me overcome challenges and stay motivated.