

ACKNOWLEDGMENTS

The completion of this thesis would not have been possible without the collective effort, help, and support from both students and lecturers. I would like to express my deepest gratitude and thanks to:

1. Dr. Yuliant Sibaroni, S.Si., M.T., my supervisor, for his invaluable guidance, insightful feedback, and unwavering support throughout this research.
2. Dr. Setyorini, S.T., M.T., the Head of the Master Informatics program, for her leadership, encouragement, and for fostering an environment conducive to academic excellence.
3. All the faculty members and staff of the Informatics program for their dedication and assistance, which have greatly contributed to my academic journey.
4. My family, especially my parents, Alice and Bob, for their unconditional love, support, and encouragement, which have been the cornerstone of my success.
5. My friends, who have always been there to offer support, share ideas, and provide encouragement during challenging times.

To everyone who has contributed to this journey, directly or indirectly, your support has been invaluable, and I am deeply grateful for your contributions.