

ACKNOWLEDGEMENTS

Bismillāhirrahmānirrahīm. In the name of Allah, the Most Gracious, the Most Merciful. I am immensely grateful to Almighty Allah SWT, Al-Mujīb (The Responsive) and Al-‘Alim (The All-Knowing), for His abundance of blessings and grace, for the ease and sense of serenity and little anxiety in the author’s life, specifically during the thesis research. Without His will, none of this would have been possible. Additionally, I express my deepest reverence to the Prophet Muhammad SAW, whose shows a path full of blessings and guidance for mankind.

This thesis marks the completion of a significant journey in my academic life, and none of this would have been possible without the support, encouragement, and prayers of many people who stood by me throughout this process. In particular, I would like to express my heartfelt thanks to:

1. My beloved parents, **Mr. Nurung and Mrs. Masyita**, and my siblings, **Fathur, Azizah, and Mursyid**, for their endless love and affection, for their unwavering prayers and support so that the author can reach this stage.
2. **Mr. Angga Rusdinar, S.T., M.T., Ph.D.**, as the supervisor who has directed and guided the author since 2022. Your guidance and thoughtfulness have greatly influenced the author’s academic journey. It is a great honor to be your student. Thank you for your support and encouragement. The lessons taught will always be remembered for a lifetime. Thank you for being a teacher who truly cares about your students. You are a wonderful teacher, and I am very grateful for your presence in author’s life.
3. **Mr. Suryo Adhi Wibowo, S.T., M.T., Ph.D.**, as co-supervisor who has directed, guided, and provided a lot of useful knowledge and motivation to the author to complete this thesis. You are a very extraordinary teacher, I am very grateful to be guided to be your student. Thank you for being a teacher who deeply cares about your students. All your kindness will always be remembered in the author’s heart.
4. The lecturers who have provided knowledge and lessons during the author’s study at the Electrical Engineering master program, Telkom University.
5. **Lailatun Adzimah**, a friend who has accompanied me since the beginning of my Master’s study, always by my side and a place to share many stories.

Thank you for all the valuable advice and reprimands when I did wrong for your incredible patience in dealing with me. Having you as a friend is a true blessing. Your presence has made this journey significantly more meaningful.

6. **Muhammad Fasha Aqillah**, a friend who always helped the author while working on the thesis. Thank you for taking a lot of time and energy to provide solutions to various problems that the author faced during this process. Your care and direction have had a very meaningful impact, helping the author to get through various challenges with more confidence.
7. For my friends "**Calon Perwira**" who have been an integral part of my journey during my Master's study: **Luthfi, Amir, Bang Daffa, Trischa, Timo, Alfiqri, Bang Dimas** and **Faqih**. Your presence is more than just a friend; you are an incomparable source of inspiration, joy, and support. Every moment we shared, every laugh and chat, has enriched my academic journey with beautiful memories and new passion. Thank you for every second we spent together, which not only made this journey more colorful, but also provided deep meaning that I will never forget.
8. For my friends "**Cegil Sholehah**", **Liya, Dara, Asha, and Alya**. I am very grateful for all the self-motivation and emotional support you have given me. I feel very lucky and grateful to have you alongside me.
9. Friends from the **INACOS** and **AILO** Laboratories who have been an important part of the author's journey during the Master's study. Thank you for providing a space to share stories, experiences, and being part of the author's life story during this thesis work. Your presence has given a special color to my academic experience.
10. I would also like to thank all the people who have supported and helped me throughout this academic journey, although I cannot mention them individually. Your support and help, both direct and indirect, have been invaluable and have contributed to this achievement. Thank you for all the attention and contributions you have made.

Finally, I hope that every kindness and support that you have given will be rewarded many times over by Allah SWT. May Allah make all your affairs easier and give blessings in every step of life. May we all be gathered in happiness and beauty in His heaven, in a state full of His grace and pleasure.