

ACKNOWLEDGMENTS

God, thank you for Your Grace and Blessing, so the author was able to complete the study. Without Your Kindness, the author will not be able to finish this thesis and achieve the Master's degree.

The journey to earn a Master's degree ended with the completion of this thesis. The author would never reach this point without the help, support, efforts, and prayers from family, relatives, friends, and lecturers. Therefore, the author would like to express the deepest gratitude and thanks to:

1. Father, Mother, and Brother, the author's beloved family, for your support, prayer, and affection given to the author so far. What you have done is uncountable and will never be able to be repaid. May God always give you happiness, health, and a long life.
2. **Angga Rusdinar, S.T., M.T., Ph.D** as Supervisor and Lecturer of Robotics, for all your great excellent inspiring ideas so that the difficult lessons become easier. And also for allowing me to join The University Information and Autonomous Control System Laboratory (INACOS) and for entrusting this research topic to the author. Many experiences, knowledge, insights, and examples were obtained from insightful discussions and valuable advice.
3. **Dr. Eng. Willy Anugrah Cahyadi, S.T., M.T.** as Co-Supervisor, for the guidance, help, and excellent advice in this thesis, and understanding the author's condition. Thank you for the trust given, even though the author still has many shortcomings. That way, the author can cultivate self-confidence again.
4. All colleagues who have accompanied the author's days while studying at Magister: **Izzah, Laila, Daffa, Luthfi, Trischa, Amir** and **Fasha**. It's nice to get to know and learn with you. May your life be blessed.
5. All INACOS members, especially: **Alfiqri, Reinald, Radya, Alfian, Rizal, Figo** and **Susan**. Thank you for your support and prayers. Glad to know you. You guys are so cool.
6. My Other Friends, who I cannot be mentioned one by one, thank you for the opportunity, support, experiences, and prayers.

Perhaps that all is what the author can say. I do appologize if there is a misspelled for name and titles. For the parties who missed from the above gratitude, the author apologizes profusely for the negligence. May God the All-Mighty, whom nothing escapes His control, record your kindness and reward it with the best possible reward.