ACKNOWLEDGEMENTS

I would like to express my heartfelt gratitude to everyone who contributed to the completion of this research report.

First and foremost, my deepest thanks go to my advisor, Dr. Sirilak Chumkiew, for her invaluable guidance, support, and patience throughout this research process. Her insights and expertise have been essential in shaping this project, and Her encouragement has kept me motivated during challenging times.

I would also like to express my gratitude to my co-advisor, Assoc. Prof. Dr. Krisanadej Jaroensutasinee, for providing essential resources and facilities that made this research possible. My heartfelt thanks go to Assoc. Prof. Dr. Mullica Jaroensutasinee and the members of the Center of Excellence for Ecoinformatics at Walailak University for their valuable discussions, insights, and support.

A special mention goes to the Development and Promotion of Science and Technology Talent (DPST) scholarship for financial support, which has been instrumental in bringing this project to fruition.

Finally, I am grateful to my family and friends for their unwavering support, understanding, and encouragement throughout this journey.

Sinlapachat Pungpa