

Acknowledgements

I would like to express my gratitude and appreciation to my supervisor, Emeritus Professor Dr. Don McNeil and my co-supervisor Dr. Siripen Wikaisuksakul for their invaluable assistance and helpful guidance on this thesis.

I appreciate Asst. Prof. Dr. Chamnein Choonpradub for suggestion and helps also encouragement.

I would like to thanks to faculty of Communication Sciences and Prince of Songkla University who provided me a scholarship, department of Mathematics and Computer Science, faculty of Science and Technology, and Graduate School for providing me facilities.

Finally, I would like to thanks to my family, friends, and colleagues for their help and support throughout my study.

Sumpunt Khongmark