

Acknowledgements

First and foremost, this dissertation would not have been possible without the expert guidance of my esteemed advisor, Prof. Nen-Fu Huang. Not only was he readily available for me, as he so generously is for all of his students, but I am deeply indebted to Prof. Huang for his encouragement, advice, mentoring, and research support throughout my master's and doctoral studies. His oral and written comments are always extremely perceptive, helpful, and appropriate. I also truly appreciate his patience and tolerance during my numerous mishaps.

I am thankful that many people in my field have offered both sound professional advice and welcome friendship, including Justin Jan, Bright Cheng, Guang-Hsiung Liao, Shi-Ming Zhao, Canaan Kao, Joe Chiou, and Johnson Lu. Alvin Lu, my best old friend, has helped me stay sane and given me so much support through these sometimes difficult years.

Finally, I acknowledge, appreciate, and return the love and support of my family, without whom I would be lost. My parents Hung-Yi and Yi-Chia Liu have been my emotional anchors through not only the vagaries of graduate school, but my entire life. My wife Yi-Ching Lee will always share a part of my soul, and I dedicate this dissertation to her.