## Acknowledgements

Obtaining my doctoral degree was an unforgettable and wonderful journey. With the help and support of friends and colleagues along the way, these past 5 years have been challenging but immensely rewarding.

First and foremost, I would like to thank my senior supervisor, Dr. Richard Zhang, for his support, encouragement, and guidance throughout my PhD program. He has encouraged me to work on impactful and challenging research topics, and has taught me how to find good research problems. Richard is a responsible and patient supervisor, as well as an insightful researcher, all of which I hope to one day emulate.

I also want to thank my co-supervisors, Dr. Hui Huang and Dr. Daniel Cohen-Or, for the help and guidance they provided me—especially in the early stages of my PhD research. I started my collaboration with my three mentors Richard, Hui and Daniel even before I started my PhD. They have taught and trained me in different aspects, and have collectively made me become a mature researcher.

In addition, I would like to thank the rest of my thesis committee: Dr. Manolis Savva, Dr. Matthias Zwicker, and Dr. Angel Chang, for their insightful comments, suggestions, and questions.

I am appreciative of the great research fellows and friends in GrUVi lab I have gotten to know. They are Zhiqin Chen, Wallace Pinto Lira, Akshay Gadi Patil, Fengen Yu, Zili Yi, Johannes Merz, Manyi Li, Ali Mahdavi-Amiri, Arezou Fatemi, Chenyang Zhu, Renjiao Yi, Rui Ma, Jon Liu, Changqing Zou, Han Liu, Zhaopeng Cui, Chengzhou Tang, Rui Huang, Zeshi Yang, Xi Ao, Jaime Vargas, Warunika Ranaweera, Zeinab Sadeghipour Kermani, among many others.

Last but not least, I give my special appreciation to my fianceé, Jingwen Zhang, the most beautiful lady in the world, for the companionship, support, and trust she gave me during the most difficult times of obtaining my PhD. Thank you for always being there for me.