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**Title:** Automatic quantification of intravascular optical coherence tomography

**Issue Date:** 2014-11-13

## List of abbreviations

|       |                                            |
|-------|--------------------------------------------|
| BMS   | bare-metal stents                          |
| BVS   | bioresorbable vascular scaffold            |
| CABG  | coronary artery bypass graft               |
| CAD   | coronary artery disease                    |
| CHD   | coronary heart disease                     |
| CT    | computer tomography                        |
| DES   | drug-eluting stents                        |
| FP    | false positive                             |
| GT    | ground truth                               |
| GW    | guide wire                                 |
| HDL   | high-density lipoprotein                   |
| ICC   | intraclass correlation coefficient         |
| IVOCT | intravascular optical coherence tomography |
| IVUS  | intravascular ultrasound                   |
| LDL   | low-density lipoprotein                    |
| MCUSA | maximum circular unsupported surface area  |
| MRI   | magnetic resonance imaging                 |
| OCT   | optical coherence tomography               |
| PCI   | percutaneous coronary interventions        |
| PS    | protective sheath                          |
| ROI   | region of interest                         |
| SB    | side branch                                |
| TP    | true positive                              |



## Publication list

### Journal papers

**A. Wang**, J. Eggermont, N. Dekker, H. M. Garcia-Garcia, R. Pawar, J. H. Reiber, and J. Dijkstra, "Automatic stent strut detection in intravascular optical coherence tomographic pullback runs," *Int J Cardiovasc Imaging* **29**, 29-38, 2013.

**A. Wang**, J. Eggermont, N. Dekker, P. J. de Koning, J. H. Reiber, and J. Dijkstra, "3D assessment of stent cell size and side branch access in intravascular optical coherence tomographic pullback runs," *Comput Med Imaging Graph* **38**, 113-122, 2014.

**A. Wang**, J. Eggermont, J. H. C. Reiber, and J. Dijkstra, "Fully automated side branch detection in intravascular optical coherence tomography pullback runs," *Biomed Opt Express* **5**, 3160-3173, 2014.

**A. Wang**, S. Nakatani, J. Eggermont, Y. Onuma, H. M. Garcia-Garcia, P. W. Serruys, J. H. C. Reiber, and J. Dijkstra, "Automatic detection of bioresorbable vascular scaffold struts in intravascular optical coherence tomography pullback runs," *Biomed Opt Express* **5**, 3589-3602, 2014.

### Conference papers

**A. Wang**, J. Eggermont, N. Dekker, H. M. Garcia-Garcia, R. Pawar, J. H. C. Reiber, and J. Dijkstra, "A robust automated method to detect stent struts in 3D intravascular optical coherence tomographic image sequences," in *Medical Imaging*, 2012.

**A. Wang**, J. Eggermont, J. H. C. Reiber, N. Dekker, P. J. H. de Koning, and J. Dijkstra, "Assessment of implanted stent coverage of side-branches in intravascular optical coherence tomographic images," in *Medical Imaging*, 2013.

**A. Wang**, J. Eggermont, N. Dekker, J. H. Reiber, and J. Dijkstra, "Semi-automatic measurement of vessel wall support from implanted stents in IVOCT image sequences," in *MICCAI 2013 STENT*, 2013.

**Abstracts**

**A. Wang**, J. Eggermont, N. Dekker, H. M. Garcia-Garcia, R. Pawar, J. H. C. Reiber, and J. Dijkstra. "An automatic method for stent strut detection in IVOCT images," *Proc. Optics in Cardiology*, Rotterdam, 2013.

**A. Wang**, J. Eggermont, J. H. C. Reiber, N. Dekker, P. J. H. de Koning, and J. Dijkstra. "Semi-automatic assessment of side-branch coverage from stents in IVOCT images," *Proc. Optics in Cardiology*, Rotterdam, 2013.

**A. Wang**, J. Eggermont, N. Dekker, J. H. Reiber, and J. Dijkstra. "Semi-automatic assessment of the stent cell size in IVOCT images," *Proc. Optics in Cardiology*, Rotterdam, 2013.

## Acknowledgments

In the end of this thesis, I cannot help looking back on the days at the Division of Imaging Processing (LKEB), Department of Radiology, Leiden University Medical Center in the past five years. I would not be where I am today without the guidance, instruction, encouragement and other help from many people, so I want to take this opportunity to acknowledge my great debt to them.

To begin with, I would like to express my deepest appreciation to my promoters: Prof.dr.ir. Johan H.C. Reiber and Prof.dr.ir. Boudewijn P.F. Lelieveldt. Dear Hans, thank you for giving me the opportunity to pursue my Ph.D study in such an exciting field with truly outstanding researchers. I have always been inspired by your remarkable passion, dedication, wisdom and energy. Dear Boudewijn, you devoted considerable precious time and effort to helping me successfully complete the last and most difficult mile of my five years study. You also taught me how to be purposeful and active and led me through the fog to the goal.

I am especially grateful to Jouke, my co-promoter, for his immeasurable amount of support and daily guidance throughout this study. Your insights into and patient endurance throughout my project have been a true blessing. I owe you many, many thanks for all the help.

My sincere gratitude should also be given to my other colleagues in LKEB for their enthusiastic guidance, encouragement and very learned critiques of my research work. I am greatly thankful to Dr. Jeroen Eggermont for offering me valuable suggestions and sharing his Ph.D study experience with me during my study. I enjoyed working with you a lot. My grateful thanks are also extended to Mr. Niels Dekker for his persistent and selfless help in C++ programming and paper writing, to Ir. Patrick de Koning for helping me reconstruct the stent surface using VTK toolkit and to Ir. Pieter Kitslaar, Dr.ir. Alexander Broersen and Dr.ir. Jasper Janssen for their tremendous guidance on MeVisLab and all those very productive discussions. Furthermore, thank you for sharing the sweet smiles on the faces of your little angels at our office. I also benefited a lot from the regular meetings with Dr. Qian Tao and Dr. Oleh Dzyubachyk, who inspired me a lot in the research. I appreciate your valuable time and contribution. I cannot forget those short talking with Dr.ir. Martijn van de Giessen, Ir. Michèle Huijberts, Mr. Mohammed S. ElBaz and Mr. Leo Wolf after 6 PM. I must extend my appreciations to the other members of LKEB. No listing all the names here does not mean that I would forget what you have done for me. I feel so blessed to be able to pursue my dream with you all.

During my PhD study, I worked closely together with the brilliant researchers from Cardialysis BV and Erasmus Medical Center in Rotterdam. Dr. Hector M. Garcia-Garcia, Dr. Yoshinobu Onuma, Dr. Shimpei Nakatani and Prof. Patrick W. Serruys shared their clinical knowledge and provided most of the intravascular optical coherence tomography data sets and the ground truth for the validations of my research. Their contribution is essential to this thesis. Our cooperation turned out to be a great success.

Moreover, I would like to express my deepest gratitude to my family. I am truly grateful that I am surrounded by the love from my parents throughout my study. All the support they have offered me over the years was the greatest gift anyone has ever given me. Thank you, Mom and Dad, for raising me, encouraging me when I face challenges and teaching me the value of hard work. The expectation and love from you are the strongest motivation of my continuous work and the constant source of confidence. 亲爱的爸爸妈妈，谢谢你们养育了我。在我十多年求学路上，你们热情的鼓励、殷切的期盼和无私的爱，是我持续前进的最大动力，更是我永不言弃的信心来源。Meanwhile, I need to thank my dear uncle, Dr. Aimin Liu, who set a shining example to me during my long way of education. My sincere thanks are also extended to my other relatives, for their years love and support. 感谢尊敬的刘爱民叔叔及其一家，一直以来对我的关心和帮助。您一直都是我的学习榜样和楷模。也要感谢各位亲人和朋友对我学业的支持，在我留学的日子里，代我照顾我的父母，令我永志不忘。Especially, I need to thank Jinghua. I am so lucky to meet you in the Netherlands. The time we spent together and the shared joys and sorrows were the most valuable part in my life.

I also would like to express my delight to have so many fantastic friends during the study period in the Netherlands. The friendship has been linking us so tightly no matter where we are and will be. In the end but not the least, I would like to offer my appreciation to the China Scholarship Council and the Education Minister of China for financially supporting me to pursue my PhD study in the Netherlands.

## Curriculum vitae

Ancong Wang was born in Dongying, Shandong, China in 1982. In 2001, he started his bachelor study on Computer Science and Technology at Shandong University, Jinan, China. He received the bachelor degree in July 2005. In the same year, he was offered a position in one of his teachers' company, Dareway Software Company, working as a software engineer. One year later, he enrolled in the Department of Information Engineering at Northwest A&F University, Xi'an, China, as a master student, under the supervision of Prof. Dongjian He. His master project is "Study on Key Techniques for Volleyball Tracking and Trajectory Analysis". In July 2009, he graduated with honors (Cum Laude). In September 2009, he joined the Vascular and Molecular Imaging Group at the Division of Image Processing (LKEB), Department of Radiology, Leiden University Medical Center, Leiden, the Netherlands, to pursue the PhD degree. His promoters and co-promoter are Prof. dr. ir. Johan H.C. Reiber, Prof. dr. ir. Boudewijn P.F. Lelieveldt and Dr. ir. Jouke Dijkstra. He has been working on the automatic quantification in intravascular optical coherence tomography (IVOCT), including strut detection, stent analysis and side branch analysis. The works are presented in this thesis and most of the algorithms have been integrated into both scientific research and commercial software packages that were validated and used in a number of medical research centers around the world.