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## Optical coherence tomography for coronary artery disease : analysis and applications

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# Publications

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## Publications in Peer-review Journals:

- **S. Liu**, Y. Sotomi, J. Eggermont, G. Nakazawa, S. Torii, T. Ijichi, Y. Onuma, P. W. Serruys, B. P. F. Lelieveldt, and J. Dijkstra, **Tissue Characterization with Depth-Resolved Attenuation Coefficient and Backscatter Term in Intravascular Optical Coherence Tomography Images**, *J. Biomed. Opt.*, vol. 22, no. 9, p. 1, 2017.
- **S. Liu**, J. Eggermont, R. Wolterbeek, A. Broersen, C. A. G. R. Busk, H. Precht, B. P. F. Lelieveldt, and J. Dijkstra, **Analysis and Compensation for the Effect of the Catheter Position on Image Intensities in Intravascular Optical Coherence Tomography**, *J. Biomed. Opt.*, vol. 21, no. 12, p. 126005, Dec. 2016.
- Y. Sotomi, Y. Onuma, **S. Liu**, T. Asano, J. Eggermont, Y. Katagiri, R. Cavalcante, R. J. de Winter, J. J. Wykrzykowska, S. Brugaletta, L. Räber, M. Sabaté, S. Windecker, J. Dijkstra, P. W. Serruys, **Quality Difference of Neointima Following the Implantation of Everolimus Eluting Bioresorbable Scaffold and Metallic Stent in Patients with ST Elevation Myocardial Infarction: Quantitative Assessments by Light Intensity, Light Attenuation, and Backscatter on Optical Coherence Tomography in TROFI II Trial**, *EuroIntervention*, 2018 Feb 27. pii: EIJ-D-17-00884. doi: 10.4244/EIJ-D-17-00884. [Epub ahead of print] PubMed PMID: 29488886.
- Y. Sotomi, Y. Onuma, J. Dijkstra, J. Eggermont, **S. Liu**, E. Tenekecioglu, Y. Zeng, T. Asano, R. J. de Winter, J. J. Popma, K. Kozuma, K. Tanabe, P. W. Serruys, and T. Kimura, **Impact of Implantation Technique and Plaque Morphology on Strut Embedment and Scaffold Expansion of Polylactide Bioresorbable Scaffold - Insights From ABSORB Japan Trial**, *Circ. J.*, vol. 80, no. 11, pp. 2317–2326, Oct. 2016.
- Y. Sotomi, H. Tateishi, P. Suwannasom, J. Dijkstra, J. Eggermont, **S. Liu**, E. Tenekecioglu, Y. Zheng, M. Abdelghani, R. Cavalcante, R. J. de Winter, J. J. Wykrzykowska, Y. Onuma, P. W. Serruys, and T. Kimura, **Quantitative Assessment of the Stent/Scaffold Strut Embedment**

**Analysis by Optical Coherence Tomography**, *Int. J. Cardiovasc. Imaging*, vol. 32, no. 6, pp. 871–883, Jun. 2016.

- S. Nakatani, Y. Onuma, Y. Ishibashi, J. Eggermont, Y.-J. Zhang, C. M. Campos, Y. K. Cho, **S. Liu**, J. Dijkstra, J. H. C. Reiber, *et al*, **Temporal Evolution of Strut Light Intensity After Implantation of Bioresorbable Polymeric Intracoronary Scaffolds in the ABSORB Cohort B Trial**, *Circ. J.*, vol. 78, no. 8, pp. 1873–1881, 2014.
- R. Stettler, J. Dijkstra, L. Räber, R. Torii, Y.-J. Zhang, A. Karanasos, **S. Liu**, T. Crake, S. Hamshere, H. M. Garcia-Garcia, E. Tenekecioglu, M. Ozkor, S. Windecker, P. W. Serruys, E. Regar, A. Mathur, and C. V Bourantas, **Neointima and Neoatherosclerotic Characteristics in Bare Metal and First and Second Generation Drug Eluting Stents in Patients Admitted with Cardiovascular Events Attributed to Stent Failure: an Optical Coherence Tomography Study**, *EuroIntervention*, Jun. 2017.
- W. Sun, C. Wang, D. Bu, **S. Liu**, B. Wu, and M. Ouyang, **A Fuzzy Cerebellar Model Articulation Controller Based Visual Servo System for Robot**, *Int. J. Control. Autom. Syst.*, vol. 10, no. 2, pp. 430–436, Apr. 2012.

### Manuscripts Under Review in Peer-review Journals:

- **S. Liu**, O. Dzyubachyk, J. Eggermont, S. Nakatani, B. P. F. Lelieveldt, and J. Dijkstra, **Histogram-Based Standardization of Intravascular Optical Coherence Tomography Images Acquired from Different Imaging Systems**, *Med. Phys.*, Accepted.
- T. P. Kaivosoja, **S. Liu**, J. Dijkstra, H. Huhtala, T. Sheth and O.A. Kajander, **Comparison of Visual Assessment and Computer Image Analysis of Intracoronary Thrombus Type by Optical Coherence Tomography in Clinical Patients**, *Interventional Cardiology*, Under Review.

### Publication and Presentation in International Conference Proceedings:

- **S. Liu**, J. Eggermont, R. Wolterbeek, B. P. F. Lelieveldt, J. Dijkstra, **Influence of Distance and Incident Angle on Light Intensities in Intravascular Optical Coherence Tomography Pullback Runs (Conference Presentation and Publication)**, in *Photonic Therapeutics and Diagnostics XII*, Hyun Wook Kang; Guillermo J. Tearney; Kenton W. Gregory; Laura Marcu; Melissa C. Skala; Paul J. Campagnola; Bernard Choi; Haishan Zeng; Nikiforos Kollias; Andreas Mandelis; Michael D.

Morris; Brian J. F. Wong; Justus F. Ilgner, Editors, *Proceedings of SPIE*, vol. 9689 (SPIE, Bellingham, WA 2016), 96893B.

- **S. Liu**, J. Eggermont, S. Nakatani, B. P. F. Lelieveldt, J. Dijkstra, **Light Intensity Matching Between Different Intravascular Optical Coherence Tomography Systems (Conference Presentation and Publication)**, in *Photonic Therapeutics and Diagnostics XII*, Hyun Wook Kang; Guillermo J. Tearney; Kenton W. Gregory; Laura Marcu; Melissa C. Skala; Paul J. Campagnola; Bernard Choi; Haishan Zeng; Nikiforos Kollias; Andreas Mandelis; Michael D. Morris; Brian J. F. Wong; Justus F. Ilgner, Editors, *Proceedings of SPIE* Vol. 9689 (SPIE, Bellingham, WA 2016), 96893D.

### **Abstract and Poster Presentation:**

- **S. Liu**, J. Eggermont, Y. Sotomi, J. Dijkstra, **Attenuation and backscattering based tissue characterization in intravascular optical coherence tomography pullback-runs (Abstract)**, *Proc. SPIE*, 10042, *Diagnostic and Therapeutic Applications of Light in Cardiology*, 100420H (19 April 2017); doi: 10.1117/12.2251771;
- **S. Liu**, J. Eggermont, R. Wolterbeek, J. Dijkstra, **Factors which affect image intensities in IVOCT pullback runs (Abstract and Poster Presentation)**, in *Optics in Cardiology*, Rotterdam, 2015.
- **S. Liu**, J. Eggermont, R. Wolterbeek, A. Broersen, C.A.G.R. Busk, H. Precht, B. P. F. Lelieveldt, J. Dijkstra, **Improved Bioresorbable Vascular scaffold detection by Compensating for the Effect of the Catheter position on image intensities (Abstract and Poster Presentation)**, in *Optics in Cardiology*, Rotterdam, 2017.
- **S. Liu**, B. P. F. Lelieveldt, J. Dijkstra, **The detection of guide-wire with 3D volume of depth-resolved attenuation and backscattering coefficients in the intravascular optical coherence tomography (Abstract and Poster Presentation)**, in *Optics in Cardiology*, Rotterdam, 2017.



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## Curriculum Vitae

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Shengnan Liu was born in Jilin Dunhua, China, on July 29, 1986. She received her bachelor degree in Mathematics and Applied Mathematics in 2009 at Hunan University. In the same year she entered the postgraduate program majored in Control Science and Engineering with a exemption (for top 15%) from Entrance Examination. In 2012, she got her M.Sc. degree and started her Ph.D studies in Division of Imaging Processing (LKEB) in Leiden University Medical Center. Working in the Vascular and Molecular Imaging Group, her interest of research includes Tissue Analysis on Intravascular Optical Coherence Tomography images. The project has been carried out in broad collaborations with Cardialysis BV, Osaka University and Tokai University. The outcomes are collected to construct this thesis.



*It is an end of a journey,*

*yet a start of a brand new voyage...*