

List of Publications

Books:

- [BOOK-1] A. Wahle, *Präzise dreidimensionale Rekonstruktion von Gefäßsystemen aus biplanen angiographischen Projektionen und deren klinische Anwendung*. No. 152 in *Fortschritt-Berichte, Reihe Biotechnik (17)*, Düsseldorf: VDI Verlag, 1997. (in German).

Book Chapters:

- [CHAP-1] A. Wahle and M. Sonka, "Coronary plaque analysis by multimodality fusion," in *Plaque Imaging: Pixel to Molecular Level*, J. S. Suri, C. Yuan, D. L. Wilson, and S. Laxminarayan, eds., vol. 113 of *Studies in Health, Technology and Informatics*, Amsterdam, pp. 321–359, IOS Press, 2005.
- [CHAP-2] J. H. C. Reiber, G. Koning, J. Dijkstra, A. Wahle, B. Goedhart, F. H. Sheehan, and M. Sonka, "Angiography and intravascular ultrasound," in *Handbook of Medical Imaging — Volume 2: Medical Image Processing and Analysis*, M. Sonka and J. M. Fitzpatrick, eds., Bellingham WA, pp. 711–808, SPIE Press, 2000.
- [CHAP-3] J. Dijkstra, A. Wahle, G. Koning, J. H. C. Reiber, and M. Sonka, "Quantitative coronary ultrasound: State of the art," in *What's New in Cardiovascular Imaging?*, J. H. C. Reiber and E. E. van der Wall, eds., vol. 204 of *Developments in Cardiovascular Medicine*, Dordrecht, pp. 79–94, Kluwer, 1998.
- [CHAP-4] H. Oswald, A. Wahle, E. Wellnhofer, and E. Fleck, "3-D coronary angiography for quantitative analysis of coronary morphology," in *Cardiovascular Imaging*, J. H. C. Reiber and E. E. van der Wall, eds., vol. 186 of *Developments in Cardiovascular Medicine*, Dordrecht, pp. 57–78, Kluwer, 1996.
- [CHAP-5] H. Oswald, A. Wahle, J. Beier, S. Wegner, A. Ossen, and K. P. Pleißner, "Digital signal processing," in *Open Systems in Medicine*, E. Fleck, ed., vol. 8 of *Studies in Health, Technology and Informatics*, Amsterdam/Tokyo, pp. 190–213, IOS Press, 1995.

Peer-Reviewed Journal Articles:

- [JNL-1] P. H. Stone, A. Ü. Coşkun, S. Kinlay, J. J. Popma, M. Sonka, A. Wahle, Y. Yeghiazarians, C. Maynard, R. E. Kuntz, and C. L. Feldman, "Regions of low endothelial shear stress are the sites where coronary plaque progresses and vascular remodelling occurs in humans: An in-vivo serial study," *European Heart Journal*, vol. 28, no. 6, pp. 705–710, Mar. 2007.
- [JNL-2] A. Wahle, J. J. Lopez, M. E. Olszewski, S. C. Vigmostad, K. B. Chandran, J. D. Rossen, and M. Sonka, "Plaque development, vessel curvature, and wall shear stress in coronary arteries assessed by X-ray angiography and intravascular ultrasound," *Medical Image Analysis — Functional Imaging and Modeling of the Heart*, vol. 10, no. 4, pp. 615–631, Aug. 2006.
- [JNL-3] K. B. Chandran, A. Wahle, S. C. Vigmostad, M. E. Olszewski, J. D. Rossen, and M. Sonka, "Coronary arteries: Imaging, reconstruction, and fluid dynamic analysis," *Critical Reviews in Biomedical Engineering*, vol. 34, no. 1, pp. 23–103, 2006.
- [JNL-4] C. L. Feldman, A. Ü. Coşkun, Y. Yeghiazarians, S. Kinlay, A. Wahle, M. E. Olszewski, J. D. Rossen, M. Sonka, J. J. Popma, J. Orav, R. E. Kuntz, and P. H. Stone, "Remodeling characteristics of minimally diseased coronary arteries are consistent along the length of the artery," *American Journal of Cardiology*, vol. 97, no. 1, pp. 13–16, Jan. 2006.

- [JNL-5] S. D. Ramaswamy, S. C. Vigmostad, A. Wahle, Y. G. Lai, M. E. Olszewski, K. C. Braddy, T. M. H. Brennan, J. D. Rossen, M. Sonka, and K. B. Chandran, "Comparison of left anterior descending coronary artery hemodynamics before and after angioplasty," *Journal of Biomechanical Engineering*, vol. 128, no. 1, pp. 40–48, Feb. 2006.
- [JNL-6] A. Wahle, M. E. Olszewski, and M. Sonka, "Interactive virtual endoscopy in coronary arteries based on multi-modality fusion," *IEEE Transactions on Medical Imaging—Virtual Endoscopy*, vol. 23, no. 11, pp. 1391–1403, Nov. 2004.
- [JNL-7] S. D. Ramaswamy, S. C. Vigmostad, A. Wahle, Y. G. Lai, M. E. Olszewski, K. C. Braddy, T. M. H. Brennan, J. D. Rossen, M. Sonka, and K. B. Chandran, "Fluid dynamic analysis in a human left anterior descending coronary artery with arterial motion," *Annals of Biomedical Engineering*, vol. 32, no. 12, pp. 1628–1641, Dec. 2004.
- [JNL-8] A. Wahle, J. J. Lopez, E. C. Pennington, S. L. Meeks, K. C. Braddy, J. M. Fox, T. M. H. Brennan, J. M. Buatti, J. D. Rossen, and M. Sonka, "Effects of vessel geometry and catheter position on dose delivery in intracoronary brachytherapy," *IEEE Transactions on Biomedical Engineering*, vol. 50, no. 11, pp. 1286–1295, Nov. 2003.
- [JNL-9] A. Ü. Coşkun, Y. Yeghiazarians, S. Kinlay, M. E. Clark, O. J. Ilegbusi, A. Wahle, M. Sonka, J. J. Popma, R. E. Kuntz, C. L. Feldman, and P. H. Stone, "Reproducibility of coronary lumen, plaque, and vessel wall reconstruction and of endothelial shear stress measurements in-vivo in humans," *Catheterization and Cardiovascular Interventions*, vol. 60, no. 1, pp. 67–78, Sept. 2003.
- [JNL-10] R. Medina, A. Wahle, M. E. Olszewski, and M. Sonka, "Three methods for accurate quantification of plaque volume in coronary arteries," *International Journal of Cardiovascular Imaging*, vol. 19, no. 4, pp. 301–311, Aug. 2003.
- [JNL-11] P. H. Stone, A. Ü. Coşkun, S. Kinlay, M. E. Clark, M. Sonka, A. Wahle, O. J. Ilegbusi, Y. Yeghiazarians, J. J. Popma, J. Orav, R. E. Kuntz, and C. L. Feldman, "Effect of endothelial shear stress on the progression of coronary artery disease, vascular remodeling, and in-stent restenosis in man; in-vivo 6-month followup study," *Circulation*, vol. 108, no. 4, pp. 438–444, July 2003.
- [JNL-12] E. Wellnhofer, A. Wahle, and E. Fleck, "Progression of coronary atherosclerosis quantified by analysis of 3-D reconstruction of left coronary arteries," *Atherosclerosis*, vol. 160, no. 2, pp. 483–493, Feb. 2002.
- [JNL-13] A. Wahle, G. P. M. Prause, S. C. DeJong, and M. Sonka, "Geometrically correct 3-D reconstruction of intravascular ultrasound images by fusion with biplane angiography—methods and validation," *IEEE Transactions on Medical Imaging*, vol. 18, no. 8, pp. 686–699, Aug. 1999.
- [JNL-14] A. Wahle, G. P. M. Prause, C. von Birgelen, R. Erbel, and M. Sonka, "Fusion of angiography and intravascular ultrasound in-vivo: Establishing the absolute 3-D frame orientation," *IEEE Transactions on Biomedical Engineering—Biomedical Data Fusion*, vol. 46, no. 10, pp. 1176–1180, Oct. 1999.
- [JNL-15] K. R. Hoffmann, A. Wahle, C. Pellot-Barakat, J. Sklansky, and M. Sonka, "Biplane X-ray angiograms, intravascular ultrasound, and 3-D visualization of coronary vessels," *International Journal of Cardiac Imaging*, vol. 15, no. 6, pp. 495–512, Dec. 1999.
- [JNL-16] E. Wellnhofer, A. Wahle, I. Mugaragu, J. Gross, H. Oswald, and E. Fleck, "Validation of an accurate method for three-dimensional reconstruction and quantitative assessment of volumes, lengths and diameters of coronary vascular branches and segments from biplane angiographic projections," *International Journal of Cardiac Imaging*, vol. 15, no. 5, pp. 339–353, Oct. 1999.
- [JNL-17] A. Wahle, H. Oswald, and E. Fleck, "3-D heart-vessel reconstruction from biplane angiograms," *IEEE Computer Graphics and Applications—Applications in Surgery and Therapy*, vol. 16, no. 1, pp. 65–73, Jan. 1996.

- [JNL-18] A. Wahle, E. Wellnhofer, I. Mugaragu, H. U. Sauer, H. Oswald, and E. Fleck, "Assessment of diffuse coronary artery disease by quantitative analysis of coronary morphology based upon 3-D reconstruction from biplane angiograms," *IEEE Transactions on Medical Imaging*, vol. 14, no. 2, pp. 230–241, June 1995.

Invited Articles and Papers:

- [INV-1] A. Wahle, "Quantification of coronary hemodynamics and plaque morphology using X-ray angiography and intravascular ultrasound," in *Computer Assisted Radiology and Surgery (CARS 2004)*, H. U. Lemke, M. W. Vannier, K. Inamura, A. G. Farman, K. Doi, and J. H. C. Reiber, eds., vol. 1268 of *Excerpta Medica International Congress Series*, Amsterdam, pp. 1035–1039, Elsevier, 2004.
- [INV-2] A. Wahle, "Coronary angiography and intravascular ultrasound — spatio-temporal modeling and quantification by data fusion," in *Proc. EFOMP 2003 — Klinische Fysika*, no. 1, Utrecht, pp. 29–31, Dutch Society of Clinical Physics (NVKF), Dec. 2003.
- [INV-3] A. Wahle, S. D. Ramaswamy, M. E. Olszewski, J. D. Rossen, J. J. Lopez, Y. G. Lai, K. B. Chandran, and M. Sonka, "Temporal analysis of 3-D coronary plaque morphology and hemodynamic shear stress distribution in-vivo," in *Advances in Medical Imaging (I)*, W. Niederlag and H. U. Lemke, eds., no. 2 in Health Academy, pp. 25–31, 2002.

Conference Papers:

- [CONF-1] H. Zhang, M. T. Thomas, N. E. Walker, A. H. Stolpen, A. Wahle, T. D. Scholz, and M. Sonka, "Four-dimensional functional analysis of left and right ventricles using MR images and active appearance models," in *Proc. Medical Imaging 2007: Physiology, Function, and Structure from Medical Images*, vol. 6511, Bellingham WA, pp. 65111M.1–65111M.10, SPIE Proceedings, 2007.
- [CONF-2] A. Wahle, S. Gualano, A. De, M. Everett, M. E. Olszewski, S. C. Vigmostad, S. Çınar, K. Lee, M. Sonka, and J. J. Lopez, "Correlation of peri-procedural cardiac enzyme release with atherosclerotic plaque burden using 3-D fusion of intravascular ultrasound and angiography," in *The 1st International Workshop on Computer Vision for Intravascular and Intracardiac Imaging*, G. Ünal, I. Kakadiaris, G. Slabaugh, and A. Tannenbaum, eds., Frederiksberg, pp. 90–97, Samfundslitteratur, 2006.
- [CONF-3] M. S. Hansen, F. Zhao, H. Zhang, N. E. Walker, A. Wahle, T. D. Scholz, and M. Sonka, "Detection of connective tissue disorders from 3-D aortic MR images using independent component analysis," in *Computer Vision Approaches to Medical Image Analysis (CVAMIA06)*, R. Beichel and M. Sonka, eds., vol. 4241 of *Lecture Notes in Computer Science*, Berlin/New York, pp. 13–24, Springer, 2006.
- [CONF-4] M. S. Hansen, F. Zhao, H. Zhang, B. K. Ersbøll, A. Wahle, T. D. Scholz, and M. Sonka, "Diagnosis of connective tissue disorders based on independent component analysis of aortic shape and motion from 4-D MR images," in *The 1st International Workshop on Computer Vision for Intravascular and Intracardiac Imaging*, G. Ünal, I. Kakadiaris, G. Slabaugh, and A. Tannenbaum, eds., Frederiksberg, pp. 154–161, Samfundslitteratur, 2006.
- [CONF-5] M. E. Olszewski, A. Wahle, M. Vembar, L. Ciancibello, A. Kerner, R. Beyar, E. Ghersin, K. Subramanian, and M. Sonka, "Quantitative analysis of vascular dimensions and plaque composition in coronary multidetector computed tomography images," in *Medical Imaging 2006: Physiology, Function, and Structure from Medical Images*, A. Manduca and A. A. Amini, eds., vol. 6143, Bellingham WA, pp. 58–69, SPIE Proceedings, 2006.

- [CONF-6] M. Sonka, F. Zhao, H. Zhang, A. Wahle, and T. D. Scholz, "Early detection of aortic aneurysm risk from 4-D MR image data," in *Proc. Computers in Cardiology 2006, Valencia*, vol. 33, Piscataway NJ, pp. 69–72, IEEE Press, 2006.
- [CONF-7] H. Zhang, N. E. Walker, S. C. Mitchell, M. T. Thomas, A. Wahle, T. D. Scholz, and M. Sonka, "Analysis of four-dimensional cardiac ventricular magnetic resonance images using statistical models of ventricular shape and cardiac motion," in *Medical Imaging 2006: Physiology, Function, and Structure from Medical Images*, A. Manduca and A. A. Amini, eds., vol. 6143, Bellingham WA, pp. 47–57, SPIE Proceedings, 2006.
- [CONF-8] F. Zhao, H. Zhang, N. E. Walker, F. Yang, M. E. Olszewski, A. Wahle, T. D. Scholz, and M. Sonka, "Quantitative analysis of two-phase 3D+time aortic MR images," in *Medical Imaging 2006: Image Processing*, J. M. Reinhardt and J. P. Pluim, eds., vol. 6144, Bellingham WA, pp. 699–708, SPIE Proceedings, 2006.
- [CONF-9] F. Zhao, H. Zhang, A. Wahle, T. D. Scholz, and M. Sonka, "Automated 4-D segmentation of aortic magnetic resonance images," in *British Machine Vision Conference 2006*, M. J. Chantler, E. Trucco, and R. B. Fisher, eds., vol. 1, Worcs, pp. 247–256, BMVA, 2006.
- [CONF-10] A. Wahle, J. J. Lopez, M. E. Olszewski, S. C. Vigmostad, K. C. Braddy, T. M. H. Brennan, S. W. Bokhari, J. G. Bennett, E. M. Holper, J. D. Rossen, K. B. Chandran, and M. Sonka, "Relationship between plaque development and local hemodynamics in coronary arteries," in *Medical Imaging 2005: Physiology, Function, and Structure from Medical Images*, A. A. Amini and A. Manduca, eds., vol. 5746, Bellingham WA, pp. 223–232, SPIE Proceedings, 2005.
- [CONF-11] A. Wahle, J. J. Lopez, M. E. Olszewski, S. C. Vigmostad, K. B. Chandran, J. D. Rossen, and M. Sonka, "Analysis of the interdependencies among plaque development, vessel curvature, and wall shear stress in coronary arteries," in *Functional Imaging and Modeling of the Heart (FIMH '05)*, A. F. Frangi, P. I. Radeva, A. Santos, and M. Hernandez, eds., vol. 3504 of *Lecture Notes in Computer Science*, Berlin/New York, pp. 12–22, Springer, 2005.
- [CONF-12] M. E. Olszewski, A. Wahle, D. Khullar, K. Subramanyan, and M. Sonka, "A study investigating automated quantitative analyses of coronary multidetector computed tomography images," in *Medical Imaging 2005: Physiology, Function, and Structure from Medical Images*, A. A. Amini and A. Manduca, eds., vol. 5746, Bellingham WA, pp. 214–222, SPIE Proceedings, 2005.
- [CONF-13] M. E. Olszewski, A. Wahle, S. C. Vigmostad, and M. Sonka, "Multidimensional segmentation of coronary intravascular ultrasound images using knowledge-based methods," in *Medical Imaging 2005: Image Processing*, J. M. Fitzpatrick and J. M. Reinhardt, eds., vol. 5747, Bellingham WA, pp. 496–504, SPIE Proceedings, 2005.
- [CONF-14] A. Wahle, M. E. Olszewski, S. C. Vigmostad, R. Medina, A. Ü. Coşkun, C. L. Feldman, P. H. Stone, K. C. Braddy, T. M. H. Brennan, J. D. Rossen, K. B. Chandran, and M. Sonka, "Quantitative analysis of circumferential plaque distribution in human coronary arteries in relation to local vessel curvature," in *Proc. 2004 IEEE International Symposium on Biomedical Imaging*, Piscataway NJ, pp. 531–534, IEEE Press, 2004.
- [CONF-15] R. Medina, A. Wahle, M. E. Olszewski, and M. Sonka, "Curvature and torsion estimation for coronary artery motion analysis," in *Medical Imaging 2004: Physiology, Function, and Structure from Medical Images*, A. A. Amini and A. Manduca, eds., vol. 5369, Bellingham WA, pp. 504–515, SPIE Proceedings, 2004.
- [CONF-16] M. E. Olszewski, A. Wahle, S. C. Mitchell, and M. Sonka, "Segmentation of intravascular ultrasound images: A machine learning approach mimicking human vision," in *Computer Assisted Radiology and Surgery (CARS 2004)*, H. U. Lemke, M. W. Vannier, K. Inamura, A. G. Farman, K. Doi, and J. H. C. Reiber, eds., vol. 1268 of *Excerpta Medica International Congress Series*, Amsterdam, pp. 1045–1049, Elsevier, 2004.

- [CONF-17] A. Wahle, J. J. Lopez, E. C. Pennington, S. L. Meeks, K. C. Braddy, J. M. Fox, T. M. H. Brennan, J. M. Buatti, J. D. Rossen, and M. Sonka, "Estimating the actual dose delivered by intravascular coronary brachytherapy using geometrically correct 3-D modeling," in *Medical Imaging 2003: Visualization, Image-Guided Procedures, and Display*, R. L. Galloway, ed., vol. 5029, Bellingham WA, pp. 129–137, SPIE Proceedings, 2003.
- [CONF-18] A. Wahle, R. Medina, K. C. Braddy, J. M. Fox, T. M. H. Brennan, J. J. Lopez, J. D. Rossen, and M. Sonka, "Impact of local vessel curvature on the circumferential plaque distribution in coronary arteries," in *Medical Imaging 2003: Physiology and Function: Methods, Systems, and Applications*, A. V. Clough and A. A. Amini, eds., vol. 5031, Bellingham WA, pp. 204–213, SPIE Proceedings, 2003.
- [CONF-19] M. E. Olszewski, A. Wahle, R. Medina, S. C. Mitchell, and M. Sonka, "Integrated system for quantitative analysis of coronary plaque via data fusion of biplane angiography and intravascular ultrasound," in *Computer Assisted Radiology and Surgery (CARS 2003)*, H. U. Lemke, K. Inamura, M. W. Vannier, A. G. Farman, K. Doi, and J. H. C. Reiber, eds., vol. 1256 of *Excerpta Medica International Congress Series*, Amsterdam, pp. 1117–1122, Elsevier, 2003.
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- [CONF-21] M. Sonka, A. Wahle, Y. G. Lai, K. B. Chandran, and J. D. Rossen, "Virtual angioscopy: 3-D and 4-D coronary hemodynamics and local atherosclerosis," in *Proc. 3rd International Workshop on Multislice CT, 3-D Imaging, Virtual Endoscopy, Rome IT*, Milan, Springer Italia, 2002/03.
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- [CONF-25] A. Wahle, S. C. Mitchell, S. D. Ramaswamy, K. B. Chandran, and M. Sonka, "Visualization of human coronary arteries with quantification results from 3-D and 4-D computational hemodynamics based upon virtual endoscopy," in *Computer Assisted Radiology and Surgery (CARS 2001)*, H. U. Lemke, M. W. Vannier, K. Inamura, A. G. Farman, and K. Doi, eds., vol. 1230 of *Excerpta Medica International Congress Series*, Amsterdam, pp. 877–882, Elsevier, 2001.
- [CONF-26] K. B. Chandran, S. D. Ramaswamy, Y. G. Lai, A. Wahle, and M. Sonka, "Effect of position and flow waveform on the fluid mechanics of a stenosed human right coronary artery," in *Proc. 2001 ASME International Mechanical Engineering Congress and Exposition*, no. BED-23134, American Society of Mechanical Engineers, 2001. CD-ROM.
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