BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Andreas Wahle, Ph.D.	Associate Research Engineer
eRA COMMONS USER NAME wahlea	Adjunct Associate Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
Technical University of Berlin, Berlin, Germany	M.Sc.	1991	Computer Science (Computer Graphics)
Technical University of Berlin, Berlin, Germany	Ph.D.	1997	Engineering (Medical Image Analysis)

A. Positions and Honors

Professional Experience

1985-1988 Siemens AG, Berlin (Germany); part-time Student Worker
04/1990-12/1991 German Heart Institute of Berlin (Germany), Cardiology; part-time Student Worker
01/1992-12/1996 German Heart Institute of Berlin (Germany), Cardiology; Computer Scientist
01/1997-07/1997 IPMD GmbH, Berlin (Germany); Computer Scientist
08/1997-02/2000 The University of Iowa, Elec. and Comp. Eng.; Postdoctoral Associate
03/2000-01/2004 The University of Iowa, Elec. and Comp. Eng.; Visiting Research Assistant Professor
02/2004-now The University of Iowa, Elec. and Comp. Eng.; Associate Research Engineer
02/2004-now The University of Iowa, Elec. and Comp. Eng.; Adjunct Associate Professor

Senior Member, IEEE – The Institute of Electrical and Electronics Engineers
Member, SPIE – The International Society for Optical Engineering

Awards

Honorable Mention Poster Award, SPIE Medical Imaging 1999 Image Processing Conference

B. Selected Publications

1 book, 6 book chapters, 24 journal papers, 59 conference papers, and 39 abstracts (as of February 2010).

Books

- A. Wahle. Praezise dreidimensionale Rekonstruktion von Gefaess-Systemen aus biplanen angiographischen Projektionen und deren klinische Anwendung [Accurate three-dimensional reconstruction of vessel systems from biplane angiographic projections and its clinical application]. Number 152 in Fortschritt-Berichte, Reihe Biotechnik (17). VDI Verlag, Duesseldorf, 1997. (in German).

Book chapters

- A. Wahle and M. Sonka. Coronary plaque analysis by multimodality fusion. In J. S. Suri, C. Yuan, D. L. Wilson, and S. Laxminarayan, editors, Plaque Imaging: Pixel to Molecular Level, volume 113 of Studies in Health, Technology and Informatics, pages 321-359, Amsterdam/Washington, 2005. IOS Press.
- J. H. C. Reiber, G. Koning, J. Dijkstra, A. Wahle, B. Goedhart, F. H. Sheehan, and M. Sonka. Angiography and intravascular ultrasound. In M. Sonka and M. J. Fitzpatrick, editors, Medical Image Processing and Analysis, volume 2 of Handbook of Medical Imaging, pages 711-808, Bellingham WA, 2000. SPIE.
- J. Dijkstra, A. Wahle, G. Koning, J. H. C. Reiber, and M. Sonka. Quantitative coronary ultrasound: State of the art. In J. H. C. Reiber and E. E. van der Wall, editors, What's New in Cardiovascular Imaging? volume 204 of Developments in Cardiovascular Medicine, pages 79-94, Dordrecht, 1998. Kluwer.

- H. Oswald, A. Wahle, E. Wellnhofer, and E. Fleck. 3-D coronary angiography for quantitative analysis of coronary morphology. In J. H. C. Reiber and E. E. van der Wall, editors, Cardiovascular Imaging, volume 186 of Developments in Cardiovascular Medicine, pages 57-78, Dordrecht, 1996. Kluwer.
- H. Oswald, A. Wahle, J. Beier, S. Wegner, A. Ossen, and K. P. Pleissner. Digital signal processing. In E. Fleck, editor, Open Systems in Medicine, volume 8 of Studies in Health, Technology and Informatics, pages 190-213, Amsterdam/Tokyo, 1995. IOS Press.

Invited Journal Papers

- A. Wahle. Coronary angiography and intravascular ultrasound – Spatio-temporal modeling and quantification by data fusion. Klinische Fysika, 2003(1):29-31, Utrecht, Dutch Society of Clinical Physics (NVKF).
- 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. Advances in Medical Imaging, 2002(2):25-31, Dresden, Health Academy.

Peer-Reviewed Journal Papers (selection)

- R. K. Johnson, S. Premraj, S. S. Patel, N. E. Walker, A. Wahle, M. Sonka, and T. D. Scholz. Automated analysis of four-dimensional magnetic resonance images of the human aorta. International Journal of Cardiovascular Imaging, vol. 26, 2010. (in press).
- K. Lee, R. K. Johnson, Y. Yin, A. Wahle, M. E. Olszewski, T. D. Scholz, and M. Sonka. Three-dimensional thrombus segmentation in abdominal aortic aneurysms using graph search based on a triangular mesh. Computers in Biology and Medicine, vol. 40, 2010. (in press).
- H. Zhang, A. Wahle, R. K. Johnson, T. D. Scholz, and M. Sonka, 4D cardiac MR image analysis: Left and right ventricular morphology and function. IEEE Transactions on Medical Imaging, 29(2):350-364, Feb. 2010.
- F. Zhao, H. Zhang, A. Wahle, M. T. Thomas, A. H. Stolpen, T. D. Scholz, and M. Sonka. Congenital aortic disease: 4D magnetic resonance segmentation and quantitative analysis. Medical Image Analysis, 13(3):483-493, Jun. 2009.
- P. H. Stone, A. U. Coskun, 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, 28(6):705-710, Mar. 2007.
- A. Wahle, J. J. Lopez, M. E. Olszewski, S. C. Vigmostad, K. B. Chandran, J. D. Rossen, and Milan Sonka. Plaque development, vessel curvature, and wall shear stress in coronary arteries assessed by X-ray angiography and intravascular ultrasound. Medical Image Analysis, 10(4):615-631, Aug. 2006.
- 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, Begell House, 34(1):23-103, 2006.
- C. L. Feldman, A. U. Coskun, 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, 97(1):13-16, Jan. 2006.
- 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, 32(12):1628-1641, 2004.
- A. Wahle, M. E. Olszewski, and M. Sonka. Interactive virtual endoscopy in coronary arteries based on multi-modality fusion. IEEE Transactions on Medical Imaging, 23(11):1391-1403, Nov. 2004.
- 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, 50(11):1286-1295, Nov. 2003.
- P. H. Stone, A. U. Coskun, 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, 108(4):438-444, July 2003.
- 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, 18(8):686-699, Aug. 1999.

C. Research Support

Ongoing Research Support

GIA 0755798Z Wahle (PI) 07/01/2007 – 04/30/2010
AHA/Heartland Affiliate
4D Ultrasound Segmentation & Statistical Modeling of the Left Ventricle for Mechanical Dyssynchrony Assessment
Development and validation of methodology to analyze shape and motion patterns of patients with congestive heart failure and left ventricular mechanical dyssynchrony (LVMD), for whom the outcome of cardiac resynchronization therapy (CRT) is known. Aim is to develop a predictive classifier will be developed to identify (prior to implantation) LVMD subjects for whom CRT is likely to be successful.
Role: Principal Investigator

[Intramural Grant] Abiose, Wahle (PI's) 03/01/2007 – 06/30/2010
University of Iowa/Internal Medicine
Left-Ventricular Mechanical Dyssynchrony Assessment by 4D Segmentation and Statistical Modeling of Real-Time 3D Echocardiography Data
This is a Pilot Grant in Translational Research to facilitate a feasibility study on left-ventricular shape and motion modeling in LVMD patients before and after CRT, including prospective in-vivo imaging.
Role: Co-Principal Investigator

R01 HL 063373 Sonka (PI) 09/15/1999 – 11/30/2010
NIH/NHLBI
3-D and 4-D Coronary Hemodynamics and Local Atherosclerosis
Aim of this project is the development of new methods and the refinement of existing methods for 3-D and 4-D reconstruction of coronary arteries by fusion from biplane angiograms and intravascular ultrasound, followed by computational hemodynamics to correlate shear stress with local plaque thickness.
Role: Co-Investigator

R01 EB 004640 Sonka (PI) 04/01/2006 – 07/31/2013
NIH/NIBIB
Graph-Based Medical Image Segmentation in 3-D and 4-D
Development and validation of a segmentation method for optimal detection of single and multiple interacting surfaces, of a 3-D and 4-D optimal surface detection method that preserve complex topologies, and of a 3-D and 4-D optimal surface detection method that incorporates shape priors into the segmentation process. The developed methods are tested in comparison with state-of-the-art methods utilized today and their performances statistically assessed in data samples of sufficient sizes.
Role: Co-Investigator

Kardon (PI) 09/01/2009 – 08/31/2014
Veterans Administration
VA Center of Excellence for the Prevention and Treatment of Visual Loss
Post-injury remotely monitoring of visual system for objective diagnosis and treatment. Development of new treatment strategies using neurotrophic factors, immunologic modulation, and intra-ocular sustained-release delivery systems to halt damage, reducing vision loss.
Role: Co-Investigator

Completed during the last three years

Wahle (PI) 12/31/2008 – 05/15/2009
Cardiovascular Research Foundation, New York NY
Angiographic 3-D Reconstruction within the Spirit III Clinical Study.
This subcontract (primary sponsor is Abbott Vascular) performs a retrospective study on the impact of PTCA and stenting on the vessel curvature and its relevance for clinical outcome and instent restenosis.
Role: Principal Investigator of Subcontract

S10 RR 022421 Lin (PI) 02/15/2008 – 02/14/2009
NIH Shared Instrumentation Grant
Large-Scale Computing and Visualization for Cardiopulmonary Imaging
The objective of the proposal is to create a shared computation and visualization cluster system.
Role: Major user

R01 HL 071809 Sonka (PI) 08/01/2003 – 07/31/2008
NIH/NHLBI
Highly Automated Analysis of 4-D Cardiovascular MR Data
Development and validation of an active appearance model (AAM) based method for 3-D and 4-D (3-D + time) segmentation of the left and right ventricles and the thoracic aorta from volumetric MR images, to determine novel quantitative indices of ventricular and aortic morphology and function in postoperative tetralogy of Fallot patients and connective tissue disorder patients.
Role: Co-Investigator