

Prof. Dr. Bernhard Preim - Fakultät für Informatik, University of Magdeburg, Germany

Academic titles: Prof. Dr.-Ing. habil.

Date/Place of birth: 12.10.1969 Magdeburg

Professional Data

1989 - 1994	Computer Science Studies (Diplom-Informatiker), University of Magdeburg, Germany
1994 - 1998	Research Associate at the Department of Simulation and Graphics in Magdeburg
1998	Dissertation defense (Dr.-Ing.), University of Magdeburg
1999	Assistant Professor at CeVis (Center for Complex Systems and Visualization) and head of the group „Computer Assisted Liver Surgery Planning“ at MeVis (Center for Medical Diagnosis System and Visualization) Bremen
2002	Habilitation; Venia Legendi: Informatik, University Bremen
since 2003	Full Professor (C4) Applied Informatics / Visualization, Otto-von-Guericke University of Magdeburg
since 2003	Guest Professor (four weeks per year), University of Bremen

Awards & Honors: M&C2002, Best Paper Award (2002), Highly Cited Article (Top 1% within its fields), Essential Science Indicator des ISI Web of Knowledge for the article „Analysis of vasculature for liver surgical planning“ (2004), Bildverarbeitung für die Medizin, Best Paper Award (2007), Eurographics Medical Prize – 3rd Prize (2009), Eurographics Medical Prize – 1st prize (2011)

Memberships: ACM (*Association for Computing Machinery*) and the German Chapter of the ACM (Vice-Chairperson (2001-2003), Past Vice-Chairperson (2003-07))

Chair of the Scientific Advisory Board of ICCAS (International Competence Center on Computer-Assisted Surgery, since 2003) and of CURAC (Gesellschaft für Computer- und Roboterassistierte Chirurgie, 2004-2007), member of the board of CURAC (since 2007), first vice-president of CURAC (since 6/2009) GI – Gesellschaft für Informatik (Association for Informatics), GI – Member of the expert committee *Graphical Data Processing*, GI – Founder and speaker of the Medical Visualization Group since 2003, Appointment Committee *Computer Assisted Surgery*, University of Leipzig, 2005 and 2011

Associate Editor: IEEE Transactions on Medical Imaging

Reviewer: *Journals:* IEEE Transactions on Medical Imaging, IEEE Transactions on Visualization and Graphics, IEEE Computer Graphics and Applications, ACM Transactions on Graphics, Computer Graphics Forum, Computers in Biology and Medicine, Academic Radiology, NeuroImage, *Scientific organizations:* The Austrian Science Found (FWF), Netherlands Organization for Scientific Research (NWO), Österreichische Forschungsförderungsgesellschaft mbH, NSERC (Kanada)

Program committees: Simulation and Visualization (Co-Chair: 1998, 2005-2007); Bildverarbeitung für die Medizin; CURAC-Jahrestagung (since 2004, Chair: 2010), Smart Graphics; Mensch und Computer (2002-2011); Eurographics Workshop on Visual Computing in Biomedicine (Co-Chair: 2008, 2010); EuroVis (2004-2010); IEEE Visualization (2003-2007, 2011); Vision, Modelling and Visualization

International and National Collaborations: Fraunhofer MEVIS, Bremen; Innovation Center Computer Assisted Surgery (ICCAS), Leipzig; Technical University of Eindhoven, University of Bergen, Pompeu Fabra University of Barcelona, Institute of Computer Graphics and Algorithms, Vienna University of Technology; VRVis Research Center for Virtual Reality and Visualization, Ltd., Vienna; University Hospital for Otorhinolaryngology / Plastic Surgery, Leipzig, Zuse-Institute Berlin

Grant support:

Finished

DFG: „Entwicklung und Validierung von Visualisierungs- und Interaktionstechniken bei der Operationsplanung am Beispiel der onkologischen Leberchirurgie“ (PE 199/9-1 und 9-2), beantragt gemeinsam mit der Universitätsklinik Essen (BR 483/5-1, BR 483/5-2).
(Staff: ½ BAT IIa, funds: 170.000 €, duration: 2000-2005)

Bayerische Forschungsstiftung: „Visualization for Planning Minimally-Invasive Surgery – Computer-unterstützte Therapieplanung“. Staff: 1 BAT IIA, funds: 143.000 € of 1.0 Mio. €, duration 2002-2005

BMBF: „EXIST-Gründerstipendium Dornheim Medical Images – Softwareunterstützung für die Operationsplanung in der HNO-Chirurgie“,
Staff: 3 Stipendiaten, funds: 92.400 €, duration: 2008-2009

DFG: „Bildanalyse und Visualisierung für die computergestützte Planung und intraoperative Unterstützung von HNO-chirurgischen Eingriffen“, (Pr 660/3-1, Pr 660/3-2)
Staff: 2x BAT IIA, funds: 300.000 €, duration: 2004-2010

LSA: „MOBESTAN Modellierung und Beeinflussung von Strömungen in Aneurysmen“. Staff: 0.5 TÖVD 13, duration: 2008-2010

BMBF: „Liver Surgery Training“, part of „FUSION - Future Environment for Gentle Liver Surgery Using Image-Guided Planning and Intra-Operative Navigation“
Staff: 1.5 x BAT IIA, funds: 400.000 € of 15 Mio.€, duration: 2005-2011

BMBF: Verbundvorhaben FUSION – SOMIT Querschnittprojekt „Ausbildung und Training“,
Staff: 0,5 BAT IIA, funds 61.200 €, duration: 2007-2011

BMBF: ViERforES - Generierung qualitativ hochwertiger 3D-Organmodelle,
Staff: TÖVD 13, duration: 2008-2011

Current Projects

DFG: „Efficient Visual Analysis of Dynamic Medical Image Data“, part of DFG-SPP 1335,
Staff: 1 BAT IIA, funds 180.000 €, duration 2008-2011

DFG: „Visual Analytics in Public Health“, part of DFG-SPP 1335,
Staff: 1 BAT IIA, funds 180.000 €, duration 2011-2014

BMBF: Verbundvorhaben Surgery Tube - Web 2.0 Technologien in der Qualifizierung von Chirurgen (Teilprojekt Didaktische Konzeption und webbasierte 3D-Visualisierungen), Staff: 1.5 TÖVD 13
duration: 2010 – 2013

BMBF: Verbundvorhaben: ViERforES (Teilprojekt: Generierung qualitativ hochwertiger 3D-Organmodelle), Staff: 1 TÖVD 13

Most important publications (last five years)

Books:

Bernhard Preim and Raimund Dachsel, Interaktive Systeme, Springer 2010

Bernhard Preim and Dirk Bartz, Visualization in Medicine, Morgan Kaufman, 2007

Journals:

Steffen Oeltze, Bernhard Preim, Wolfgang Freiler, Helmut Doleisch, Rayk Hillert, Walter Schubert. “Interactive, Graph-based Visual Analysis of High-dimensional, Multi-parameter Fluorescence Microscopy Data in Toponomics”, *IEEE Transactions on Visualization and Graphics* 17(5), 2011

Rocco Gasteiger, Mathias Neugebauer, Oliver Beuing, Bernhard Preim. “The FlowLens: A Focus and Context Visualization Approach for Exploration of Blood Flow in Cerebral Aneurysms”, *IEEE Transactions on Visualization and Graphics* 17(5), 2011

Mathias Neugebauer, Gabor Janiga, Oliver Beuing, Martin Skalej and Bernhard Preim. „Anatomy-Guided Multi-Level Exploration of Blood Flow in Cerebral Aneurysms“, *Computer Graphics Forum (EuroVis)*, (1041-1050), 2011

Alexandra Baer, Rocco Gasteiger, Douglas Cunningham and Bernhard Preim. “Perceptual Evaluation of Ghosted View Techniques for the Exploration of Vascular Structures and Embedded Flow“, *Computer Graphics Forum (EuroVis)*, (811-820), 2011

Tobias Mönch, Rocco Gasteiger, Gabor Janiga, Holger Theisel, Bernhard Preim: “Context-aware mesh smoothing for biomedical applications“, *Computers & Graphics* 35(4): 755-767, 2011

Sylvia Glaßer, Steffen Oeltze, Anja Hennemuth, Christoph Kubisch, Andreas Mahnken, Skadi Wilhelmsen, Bernhard Preim: “Automatic Transfer Function Specification for Visual Emphasis of Coronary Artery Plaque“, *Computer Graphics Forum*, 29 (1): 191–201, 2010

Konrad Mühler, Christian Tietjen, Felix Ritter, Bernhard Preim. "The Medical Exploration Toolkit - An efficient support for visual computing in surgical planning and training", *IEEE Transactions on Visualization and Graphics*, 16(1):133-146, 2010

Mathias Neugebauer, Rocco Gasteiger, Oliver Beuing, Volker Diehl, Martin Skalej, Bernhard Preim. "Map Displays for the Analysis of Scalar Data on Cerebral Aneurysm Surfaces", *Computer Graphics Forum*, 28 (3): 895-902, 2009

Bernhard Preim, Steffen Oeltze, Matej Mlejnek, Eduard Gröller, Anja Hennemuth, and Sarah Behrens. "Survey of the Visual Exploration and Analysis of Perfusion Data", *IEEE Transactions on Visualization and Graphics*, 15(2):205-220, 2009

Arno Krüger, Christoph Kubisch, Gero Strauß, Bernhard Preim. Sinus Endoscopy - Application of Advanced GPU Volume Rendering for Virtual Endoscopy. *IEEE Transactions on Visualization and Computer Graphics*, 14(6), 2008, p. 1491-1498.

Christian Schumann, Mathias Neugebauer, Ragnar Bade, Bernhard Preim "Implicit Vessel Surface Reconstruction for Visualization and CFD Simulation", *International Journal of Computer Assisted Radiology and Surgery*, 2008, 2(5): 275-286

Jana Dornheim and Heiko Seim and Bernhard Preim and Ilka Hertel and Gero Strauss. "Segmentation of Neck Lymph Nodes in CT Datasets with Stable 3D Mass-Spring Models", *Academic Radiology*, 14(11): 1389-1399, 2007

Steffen Oeltze, Helmut Doleisch, Helwig Hauser, Philipp Muigg, and Bernhard Preim. „Interactive Visual Analysis of Perfusion Data”, *IEEE Transactions on Visualization and Graphics*, 13(6): 1392-1399, 2007

Felix Ritter, Christian Hansen, Bernhard Preim, Volker Dicken, Olaf Konrad-Verse. „Real-Time Illustration of Vascular Structures for Surgery”, *IEEE Transactions on Visualization and Graphics*, 12:877-884, 2006