

CV Dr. Susanne Krömker

Name: Dr. Susanne Krömker
Date and place of birth: April 20, 1964 in Osnabrück, Germany
Nationality: German
Address: Interdisziplinäres Zentrum für Wissenschaftliches Rechnen (IWR)
Heidelberg University
Im Neuenheimer Feld 205, 69120 Heidelberg
Phone: +49-6221/54-14413
E-Mail: kroemker@iwr.uni-heidelberg.de
Internet: <https://www.iwr.uni-heidelberg.de/~Susanne.Kroemker/>

Professional Career

2004 to date Head of main research group *Visualization and Numerical Geometry* (vNKG) at IWR (permanent position)
2007 – 2009 Head of Junior Research Group Computer Graphics of the Heidelberg Graduate School *Mathematical and Computational Methods for the Sciences* (HGS MathComp)
1998 – 2004 Scientific Assistant at IWR (C1)
1997 Doctorate in Mathematics (Dr. rer. nat.), Ruprecht-Karls-Universität Heidelberg
1993 – 1997 Scientific Employee of SFB 359
1994 – 1997 Member of the Graduate College at IWR
1991 – 1992 Scientific Employee of SFB 123
1991 Diploma in Mathematics, Ruprecht-Karls-Universität Heidelberg
1984 – 1991 Study of Mathematics and Chemistry in Heidelberg
1983 – 1989 Scholarship of the Studienstiftung des deutschen Volkes
1983 – 1984 Study of Mathematics and Business Management in Osnabrück

Third Party Funding

DFG-SNF (D-A-CH) Project, 2014 - 2016, *Improving Limited Angle X-ray computed Tomography by Optical data integration (ILATO)*
FRONTIER Project, 2008 - 2010, *Synchronous Generation of Language and 3D-Scenes: Instructional Discourse (SightSee)*
BMBF Project, Grant 03WNX2HD, 2002 - 2005, *Mathematical Concepts and Computer Graphics for the Reconstruction of Stalactite Vaults - Muqarnas - in Islamic Architecture*
SFB 359, 2001 - 2004, *Reactive Flow, Diffusion and Transport: Project E, Visualization with Volume Rendering*

Workshops and Summerschools

Workshop on *Computer Graphics*, Royal University of Phnom Penh, Cambodia (2017)
AIMS Summerschool on *Scientific Computing*, Capetown, South Africa (2017)
Workshop on *Scientific Computing*, Kyoto University (Kyodai), Kyoto, Japan (2015)
Ladenburger Diskurs *Digitales Modell Kloster Lorsch*, Ladenburg, Germany (2015)
Workshop on *Scientific Computing*, Hebrew University, Jerusalem, Israel (2012)
Workshop on *Scientific Computing*, Jiao Tong University, Shanghai, China (2010)
Conference on *Trends in Nonlinear Analysis*, Heidelberg University, Germany (2000)

Teaching Activities

Computer Graphics I & II (Lectures in English as well as in German)
Praktische Geometrie (Lecture)
Einführung in die Geometrie (Lecture)
Algorithmische Geometrie (Lecture)
Visualisierung im Bereich Cultural Heritage (Lecture)
Diskrete Morsetheorie (Seminar)
Rechtliche und gesellschaftliche Aspekte von Daten und Bildern (Seminar)
Topologische Methoden in der Computergraphik (Seminar)
Softwarepraktikum Computergraphik

Acted as Supervisor

All doctoral students officially supervised by Prof. Willi Jäger, Prof. Georg Bock or Prof. Gerhard Reinelt as indicated

Andreas Beyer (Bock, 2016)

Data Fusion of Surface Meshes and Volumetric Representations

Hubert Mara (Jäger, 2012)

Multi-Scale Integral Invariants for Robust Character Extraction from Irregular Polygon Mesh Data

Pheakdey Nguonphan (Jäger, 2009)

Computer Modeling, Simulation and Visualization of Angkor Wat Style Temples in Cambodia

Pau Montes (Jäger, 2006)

Dynamic cone-beam reconstruction for perfusion computed tomography

Silvia Harmsen (Reinelt, 2006)

Algorithmic Computer Reconstructions of Stalactite Vaults - Muqarnas - in Islamic Architecture

Diploma Theses and Master Theses

Bryan Wolfford (2019)

Sophea Wiesenfarth-Chan (2017)

Jonathan Wüst (2016)

Sokchea Kor, Markus Schaber (2014)

Julia Freudenreich (2012)

Katarina Boland, Lenka Debreova, Jan Hering, Bastian Rieck (2010)

Jens Fangerau (2009)

Bachelor Theses and State Examination Theses

Saoud Asla, Benjamin Zimmermann (2018)

Stephan Vedder, Ömercan Yazici, Patrick Zirjacks (2017)

Guan Teck Gan, Christoph Gärtner, Tristan Klemm (2016)

Niels Bernlöhr, Christina Cater, Philipp Rettig (2015)

Lisa Kolb (2013)

Daniel Wunderlich (2012)

Markus Helbig, Marcus Krause, Philipp Stekl (2011)

Sebastian Bechtold, Robert Kreuzer, Julia Portl (2010)

Christoph Hoppe, Benjamin Rommel (2008)

Martin Gangkofer (2005)

References

- Banchoff, Thomas F. (1991). *Beyond the Third Dimension; Geometry, Computer Graphics, and Higher Dimensions*, dt. Titel: *Dimensionen; Figuren und Körper in geometrischen Räumen*, dt. Übersetzung von Susanne Krömker. Bibliothek Spektrum der Wissenschaft, Band 31.
- Bechtold, Sebastian, Susanne Krömker, Hubert Mara & Bettina Kratzmüller (2010). Rollouts of Fine Ware Pottery using High Resolution 3D Meshes. In Alessandro Artusi, Morwena Joly, Genevieve Lucet, Denis Pitzalis & Alejandro Ribes (Eds.), *Proc. VAST Int. Symposium on Virtual Reality, Archaeology and Cultural Heritage*, pp. 79–86. Palais du Louvre, Paris, France: Eurographics Association.
- Beyer, Andreas, Yu Liu & Susanne Krömker (2016). OctaCoG alignment: A fast and reliable alternative to iterative alignment schemes. In *19th International Conference on Information Fusion (FUSION)*. IEEE.
- Beyer, Andreas, Yu Liu, Hubert Mara & Susanne Krömker (2015). Mesh Reduction to Exterior Surface Parts via Random Convex-Edge Affine Features. In *Lecture Notes in Computer Science*. Berlin, Heidelberg: Springer.
- Beyer, Andreas, Hubert Mara & Susanne Krömker (2014). ILATO Project: Fusion of Optical Surface Models and Volumetric CT Data. *CoRR*, abs/1404.6583.
- Bock, Hans Georg, Somporn Chuai-Aree, Willi Jäger, Wattana Kanbua, Susanne Krömker & Suchada Siripant (2008). 3D Cloud and Storm Reconstruction from Satellite Image. In *Modeling, Simulation and Optimization of Complex Processes: Proc. of the Third International Conference on High Performance Scientific Computing*. Berlin, Heidelberg: Springer.
- Dold-Samplonius, Yvonne, Silvia Harmsen, Susanne Krömker & Michael Winckler (2005). *Magic of Muqarnas, Stalactite Vaults in Islamic Architecture, Video on DVD, on request*.
- Fangerau, Jens & Susanne Krömker (2010). Parallel Volume Rendering Implementation on Graphics Cards using CUDA. In *Facing the Multicore-Challenge*. Heidelberg Academy of Sciences by Heidelberg University Press.
- Harmsen, Silvia & Susanne Krömker (2006). Modular Reconstruction of Seljuk Muqarnas. In *Digital Cultural Heritage - Essential for Tourism, Proc. of the 1st EVA 2006 Vienna Conference, Oesterreichische Computer Gesellschaft*, pp. 35–41.
- Hering, Jan, Ingmar Gergel, Susanne Krömker, Hans-Peter Meinzer & Ingmar Wegner (2011). MITK-OpenCL: Eine Erweiterung für das Medical Imaging Interaction Toolkit. In *Bildverarbeitung in der Medizin, Informatik aktuell*. Berlin, Heidelberg: Springer.
- Hoffmann, A., F. Zimmermann, Hanno Schar, Susanne Krömker & Christoph Schulz (2004). Instantaneous three-dimensional visualization of concentration distributions in turbulent flows with crossed-plane laser-induced fluorescence imagin. In *Applied Physics B: Lasers and Optics, ISSN: 0946-2171*. Berlin, Heidelberg: Springer.
- Hölscher, Tonio, Susanne Krömker & Hubert Mara (2019). *Der Kopf Sabouroff in Berlin: Zwischen archäologischer Beobachtung und geometrischer Vermessung*, pp. 105–118. Athens, Greece: Benaki Museum.
- Hoppe, Christoph & Susanne Krömker (2009). Adaptive Meshing and Detail-Reduction of 3D-Point Clouds from Laser Scans. In *International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences*, Vol. XXXVIII-5/W1.
- Hoppe, Christoph & Susanne Krömker (2013a). Automated True Color Projection onto Adaptively Reduced Point Data from Laser Scans. In *Scientific Computing and Cultural Heritage, Contributions in Mathematical and Computational Sciences, Volume 3*, pp. 21–29. Berlin, Heidelberg: Springer.
- Hoppe, Christoph & Susanne Krömker (2013b). Towards an Automated True Color Projection onto Adaptively Reduced Point Data from 3D Surface Laser Scans. In *Scientific Computing and Cultural Heritage, Contributions in Mathematical and Computational Sciences, Volume 3*, pp. 21–29. Berlin, Heidelberg: Springer.
- Jäger, Willi, Susanne Krömker & Betty Tang (1994). Quiescence and Transient Growth Dynamics in Chemostat Models. *Math. Biosciences* 119, pp. 225–239.
- Jäger, Willi, Susanne Krömker & Eike Wolgast (Eds.) (2004). *Der Heidelberger Karl-Theodor-Globus von 1751 bis 2000*. Berlin, Heidelberg: Springer.
- Jungblut, Daniel, Stephan Karl, Hubert Mara, Susanne Krömker & Gabriel Wittum (2013). Automated GPU-based Surface Morphology Reconstruction of Volume Data for Archeology. In *Scientific Computing and Cultural Heritage, Contributions in Mathematical and Computational Sciences, Volume 3*, pp. 41–49. Berlin, Heidelberg: Springer.
- Karl, Stephan, Daniel Jungblut, Hubert Mara, Gabriel Wittum & Susanne Krömker (2014). Insights into manufacturing techniques of archaeological pottery: Industrial X-ray computed tomography as a tool in

- the examination of cultural material. In *Craft and science: International perspectives on archaeological ceramics*. UCL Qatar Series in Archaeology and Cultural Heritage, 1.
- Kirkilionis, Markus, Susanne Krömker & Rolf Rannacher (Eds.) (2003). *Trends in Nonlinear Analysis*. Berlin, Heidelberg: Springer.
- Kolb, Lisa & Susanne Krömker (2017). All about Cells. In *Complexity and Synergetics*, pp. 209–225. Berlin: Springer.
- Krömker, Susanne (1997a). Model and Analysis of Heterogeneous Catalysis with Phase Transition. *PhD thesis, Heidelberg University*.
- Krömker, Susanne (1997b). Wave Bifurcation. In Frank Behrendt & Jürgen Warnatz (Eds.), *Proc. of the 3rd Workshop on Modelling of Chemical Reaction Systems*.
- Krömker, Susanne (1998). Wave bifurcation in models for heterogeneous catalysis. *Acta Mathematica Universitatis Comenianae*, 67 No 1 (spring):83–100.
- Krömker, Susanne (2009). *The German language version: The London Charter 2.1, last update: 2013*. <http://www.londoncharter.org>. [Online; accessed 19-January-2019].
- Krömker, Susanne (2013). *Neue Methoden zur besseren Lesbarkeit mittelalterlicher Grabsteine am Beispiel des Heiligen Sands in Worms*, pp. 167–188. Schnell & Steiner.
- Krömker, Susanne (2015). Digitales Modell Kloster Lorsch - Ein Ladenburger Diskurs zum Thema virtueller Rekonstruktion. In *Sonderheft Sehenswerte, Schlösser und Gärten Hessen, 1*.
- Krömker, Susanne & Jens Dannehl (2000). Wissenschaftliches Rechnen und Restaurierung einer Globuskugel. *Theke 2000, Informationsblatt der Universitätsbibliothek Heidelberg*, pp. 27–36.
- Krömker, Susanne & Willi Jäger (2004). Map Projection versus Image Processing – the Role of Mathematics in the Restoration Process. In Willi Jäger, Susanne Krömker & Eike Wolgast (Eds.), *Der Heidelberger Karl-Theodor-Globus von 1751 bis 2000*, pp. 69–100. Berlin, Heidelberg: Springer.
- Krömker, Susanne & Jörg Rings (2006). Volume rendering in scientific applications. In Willi Jäger, Rolf Rannacher & Jürgen Warnatz (Eds.), *Reactive Flow, Diffusion and Transport*. Berlin, Heidelberg: Springer.
- Mara, Hubert, Jan Hering & Susanne Krömker (2009). GPU based Optical Character Transcription for Ancient Inscription Recognition. In *15th International Conference on Virtual Systems and Multimedia, IEEE Computer Society, Proc. of VSMM09, Vienna, Austria*, pp. 154–159.
- Mara, Hubert & Susanne Krömker (2017). Computing for Archaeological Artefacts with Integral Invariant Filters in 3D. In *Proc. of the Workshop on Graphics and Cultural Heritage (GCH)*. Graz, Austria: Eurographics Association.
- Mara, Hubert, Susanne Krömker, Stefan Jakob & Bernd Breuckmann (2010). GigaMesh and Gilgamesh - 3D Multiscale Integral Invariant Cuneiform Character Extraction. In Alessandro Artusi, Morwena Joly, Genevieve Lucet, Denis Pitzalis & Alejandro Ribes (Eds.), *Proc. VAST Int. Symposium on Virtual Reality, Archaeology and Cultural Heritage*, pp. 131–138. Palais du Louvre, Paris, France: Eurographics Association.
- Massa, Judith, Bartosz Bogacz, Susanne Krömker & Hubert Mara (2016). Cuneiform detection in vectorized raster images. In *Proc. of the 21th Computer Vision Winter Workshop (CVWW)*. online / Open Access, Rimske Toplice, Slovenia, archiv.ub.uni-heidelberg.de.
- Ngunphan, Pheakdey, Michael Winckler & Susanne Krömker (2009). Modular Modeling of Temple Columns of the Angkor Period. In *International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences*, Vol. XXXVIII-5/W1.
- Rieck, Bastian, Hubert Mara & Susanne Krömker (2013). Unwrapping highly-detailed 3D meshes of rotationally symmetric man-made objects. *ISPRS-International Society for Photogrammetry and Remote Sensing*, pp. 259–264.
- Schäfer, Anja, Hubert Mara, Julia Freudenreich, Susanne Krömker & Hans Georg Bock (2010). Visualization and Documentation of Weathered Bas-Reliefs using Close-Range 3D-Scanners. In *Proc. of 7th Int. Conference on Science and Technology In Archaeology and Conservation, Workshop on Documentation and Conservation of Stone deterioration in Heritage Places (CIPA/ICOMOS)*. Petra, Jordan.
- Schuldes, Stephanie, Katarina Boland, Michael Roth, Michael Strube, Susanne Krömker & Anette Frank (2011). Modeling spatial knowledge for generating verbal and visual route directions. In *Proc. of the 15th Annual KES Conference, Lecture Notes in Artificial Intelligence*. Berlin, Heidelberg: Springer.
- Winckler, Michael & Susanne Krömker (2006). An Image Processing Tool for the Giant Gottorf Globe. In *Digital Cultural Heritage - Essential for Tourism, Proc. of the 1st EVA 2006 Vienna Conference, Oesterreichische Computer Gesellschaft*, pp. 43–50.
- Wittur, Joyce & Susanne Krömker (2009). Lorsch Abbey and the London Charter - An Information System for a World Heritage Site. In *15th International Conference on Virtual Systems and Multimedia, IEEE Computer Society, Proc. of VSMM09, Vienna, Austria*, pp. 85–90.