

Johannes Kehrer, PhD

Curriculum Vitae



Personal Data

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Born 8 April 1983 in Linz, Austria
Nationality Austrian

Research Interests

- Data visualization / interactive visual analysis
- Tight integration of computational analysis & interactive visualization
- Visual analysis of multifaceted scientific data, i.e., spatiotemporal, multivariate, multimodal, and multirun/ensemble data (mainly from climate research and engineering)

Professional Experience

- since 04/2014 **Postdoctoral Researcher & Lecturer**, Computer Graphics & Visualization Group, Technical University of Munich, Germany, wwwcg.in.tum.de.
- Research on comparative and uncertainty visualization for reliable data discovery within the scope of the ERC advanced grant of Prof. R. Westermann
 - Lecturing, project acquisition, supervision of 9 Bachelor's theses and 2 student projects
 - Co-supervision of the PhD projects of M. Jarema and I. Demir
- 02/2013–02/2014 **Postdoctoral Researcher**, Institute of Computer Graphics & Algorithms, Vienna University of Technology, Austria, www.cg.tuwien.ac.at.
Research on comparative visual analysis of ensemble data, project acquisition, supervision of Master's theses, practical courses, and seminar projects
- 12/2011–12/2012 **Researcher**, VRVis Research Center, Vienna, Austria, www.vrvis.at.
Research & development of novel methods for comparative visual analysis
- 12/2007–11/2011 **Research & Teaching Assistant**, Visualization Group, Dept. of Informatics, University of Bergen, Norway, www.ii.uib.no/vis.
- Researching the interactive visual analysis of spatiotemporal, multivariate, and multirun/ensemble data (primarily from climate research and engineering)
 - Teaching assistant for 5 courses and co-supervisor of 2 practical courses
- 02/2007–10/2007, **Master's Thesis & Internship**, VRVis Research Center, Vienna, Austria.
07/2006–11/2006 Development of interactive visual analysis methods for large time series data
- 10/2006–02/2007 **Lab Tutor**, Vienna University of Technology, Austria.
- 07/2005–09/2005 **Programmer**, Ars Electronica Futurelab, Linz, Austria, www.aec.at.
Development of virtual 3D worlds for the "CAVE" and "Humphrey" flight simulator
- 03/2005–06/2005 **Intern**, Inst. f. Computer Graphics & Vision, Graz Univ. of Techn., Austria.
Advancement of the mixed reality installation "Virtual Showcase"

10/2003–01/2005 **Lab Tutor**, Univ. of Applied Sciences Upper Austria, Hagenberg, Austria.

08/2004–09/2004 **Web Programmer**, WebDynamite IT Solutions GmbH, Linz, Austria.

Education

12/2007–06/2011 **PhD in Visualization**, University of Bergen, Norway, *pass/fail grading scheme*.

Doctoral thesis Interactive visual analysis of multifaceted scientific data

Principal supervisor Prof. H. Hauser (Univ. of Bergen)

Opponents Prof. M. Chen (Univ. of Oxford), Prof. H. Schumann (Univ. of Rostock)

10/2005–10/2007 **Master's Studies in Computer Graphics & Digital Image Processing**, Vienna University of Technology, Austria, *graduation with highest distinction*.

Grade point average 1.07 (grade scale: 1 = excellent to 5 = insufficient)

Master's thesis Integrating interactive visual analysis of large time series data into the SimVis system

Supervisors Prof. H. Hauser, Dr. H. Doleisch, and DI P. Muigg

10/2002–06/2005 **Bachelor's Studies in Media Technology and Design**, Univ. of Applied Sciences Upper Austria, Hagenberg Campus, *graduation with highest distinction*.

Grade point average 1.27 (grade scale: 1 = excellent to 5 = insufficient)

09/1993–06/2001 **Grammar School**, Rohrbach, Austria, *graduation with highest distinction*.

Awards & Scholarships

2013 Spotlight paper of March issue of IEEE Trans. Visualization & Computer Graphics
The paper was highlighted on the journal's website and freely available for 30 days

2010 & 2011 Meltzer Foundation travel grant, University of Bergen

2006 & 2007 Scholarship for academic excellence, Vienna University of Technology

2006 Scholarship for academic excellence, Univ. of Applied Sciences Upper Austria

2005 Europrix Multimedia Top Talent Award

Winner in the category "Content Tool and Interface Design"

2005 Austrian National Award for Multimedia & e-Business

Jury award in the category "Förderpreis" (award for young talents) as well as special award sponsored by the Austrian Computer Society (OCG)

Teaching Activities

Courses at Technical University of Munich

Winter 2014, 2015, 2016 Scientific Visualization – Algorithms for Data Visualization *Lecturer*

Winter 2014, 2015 Seminar: How to make a Pixar movie *Seminar student supervision*

Courses at Vienna University of Technology

Summer 2013, 2014 Visualization 2 *Guest lecturer*

Summer 2012, 2013, 2014 Information Visualization *Guest lecturer*

Summer 13 Seminar: Computer Graphics/Visualization *Seminar student supervision*

Winter 2006 Virtual and Augmented Reality *Lab tutor*

Winter 2006 Introduction to Digital Image Processing *Lab tutor*

Courses at University of Bergen

Autumn 2010, Spring 2011 Introduction to Programming Methodology *Exercises & lab assignments*

Spring 2010 Program Development Methodologies *Lab assignments*

Autumn 2008, 2009	Visualization	<i>Student supervision & lab assignments</i>
Spring 2009	Selected Topics in Visualization	<i>Discussion sessions & lab assignments</i>
Spring 2008	Computer Graphics	<i>Student supervision, exercises & lab assignments</i>

Courses at University of Applied Sciences Upper Austria

Winter 2016	Advanced Computer Graphics	<i>Lecturer</i>
Winter 2004	Applied Software Techniques	<i>Lab tutor</i>
Summer 2004	Object Oriented Programming	<i>Lab tutor</i>
Winter 2003	Introduction to Programming	<i>Lab tutor</i>

Publications

Peer-reviewed Journal & Conference Publications

- [1] M. Jarema, **J. Kehrer**, and R. Westermann. Comparative visual analysis of transport variability in flow ensembles. *J. WSCG*, 24(1):25–34, 2016. (8 out of 149 submissions).
- [2] I. Demir, **J. Kehrer**, and R. Westermann. Screen-space silhouettes for visualizing ensembles of 3D isosurfaces. In *Proc. IEEE Pacific Visualization Symp. (Visualization Notes)*, pages 204–208, 2016. (41% acceptance).
- [3] M. Jarema, I. Demir, **J. Kehrer**, and R. Westermann. Comparative visual analysis of vector field ensembles. In *Proc. IEEE Conf. Visual Analytics Science and Technology (IEEE VAST)*, pages 81–88, 2015. (31% acceptance).
- [4] M. Beham, W. Herzner, M. E. Gröller, and **J. Kehrer**. Cupid: Cluster-based exploration of geometry generators with parallel coordinates and radial trees. *IEEE Trans. Visualization and Computer Graphics*, 20(12):1693–1702, 2014. (23% acceptance).
- [5] **J. Kehrer**, H. Piringer, W. Berger, and M. E. Gröller. A model for structure-based comparison of many categories in small-multiple displays. *IEEE Trans. Visualization and Computer Graphics*, 19(12):2287–2296, 2013. (25% acceptance).
- [6] **J. Kehrer** and H. Hauser. Visualization and visual analysis of multi-faceted scientific data: A survey. *IEEE Trans. Visualization and Computer Graphics*, 19(3):495–513, 2013. **Spotlight paper of the March journal issue.**
- [7] R. Borgo, **J. Kehrer**, D. Chung, E. Maguire, R. Laramée, H. Hauser, M. Ward, and M. Chen. Glyph-based visualization: Foundations, design guidelines, techniques and applications. In *Eurographics State-of-the-Art Reports*, pages 39–63, 2013.
- [8] **J. Kehrer**, R. Boubela, P. Filzmoser, and H. Piringer. A generic model for the integration of interactive visualization and statistical computing using R. In *Proc. IEEE Conf. Visual Analytics Science and Technology (VAST)*, pages 233–234, 2012.
- [9] **J. Kehrer**, P. Muigg, H. Doleisch, and H. Hauser. Interactive visual analysis of heterogeneous scientific data across an interface. *IEEE Trans. Visualization and Computer Graphics*, 17(7):934–946, 2011. (23% acceptance).
- [10] F. Ladstädter, A. Steiner, B. Lackner, B. Pirscher, G. Kirchengast, **J. Kehrer**, H. Hauser, P. Muigg, and H. Doleisch. Exploration of climate data using interactive visualization. *J. Atmospheric and Oceanic Technology*, 27(4):667–679, 2010.
- [11] **J. Kehrer**, P. Filzmoser, and H. Hauser. Brushing moments in interactive visual analysis. *Computer Graphics Forum*, 29(3):813–822, 2010. (29% acceptance).
- [12] O. Daae Lampe, **J. Kehrer**, and H. Hauser. Visual analysis of multivariate movement data using interactive difference views. In *Proc. Vision, Modeling, and Visualization (VMV)*, pages 315–322, 2010. (52% acceptance).
- [13] A. Lie, **J. Kehrer**, and H. Hauser. Critical design and realization aspects of glyph-based 3D data visualization. In *Proc. Spring Conf. on Computer Graphics (SCCG)*, pages 27–34, 2009.

- [14] P. Muigg, **J. Kehrer**, S. Oeltze, H. Piringer, H. Doleisch, B. Preim, and H. Hauser. A four-level focus+context approach to interactive visual analysis of temporal features in large scientific data. *Computer Graphics Forum*, 27(3):775–782, 2008. (31% acceptance).
- [15] **J. Kehrer**, F. Ladstädter, P. Muigg, H. Doleisch, A. Steiner, and H. Hauser. Hypothesis generation in climate research with interactive visual data exploration. *IEEE Trans. Visualization and Computer Graphics*, 14(6):1579–1586, 2008. (25% acceptance).

Book Chapters

- [1] D. Chung, R. Laramee, **J. Kehrer**, and H. Hauser. Glyph-based multi-field visualization. In *Scientific Visualization: Uncertainty, Multifield, Biomedical, and Scalable Visualization*, pages 129–137. Springer, 2014.
- [2] F. Ladstädter, A. Steiner, B. Lackner, G. Kirchengast, P. Muigg, **J. Kehrer**, and H. Doleisch. SimVis: An interactive visual field exploration tool applied to climate research. In *New Horizons in Occultation Research*, pages 235–245. Springer, 2009.

Other Publications

- [1] J. Schmidt, B. Fröhler, R. Preiner, **J. Kehrer**, M. E. Gröller, S. Bruckner, and C. Heinzl. Visual analysis of volume ensembles based on local features. Technical Report TR-186-2-16-2, Institute of Computer Graphics and Algorithms, Vienna University of Technology, May 2016.
- [2] M. Jarema, I. Demir, **J. Kehrer**, and R. Westermann. Glyph-based analysis of multimodal directional distributions in vector field ensembles. In *Geophysical Research Abstracts*, 2015.
- [3] F. Ladstädter, A. Steiner, B. Lackner, G. Kirchengast, P. Muigg, **J. Kehrer**, and H. Doleisch. Analysis of climate data using interactive visual exploration methods compared with classical statistics. In *Geophysical Research Abstracts*, 2009.
- [4] F. Ladstädter, A. Steiner, B. Lackner, G. Kirchengast, P. Muigg, **J. Kehrer**, and H. Doleisch. Assessment of climate change indicators with the interactive visual field exploration tool SimVis. In *Geophysical Research Abstracts*, 2008.

Tutorials

- 13 Oct. 2013 S. Oeltze, **J. Kehrer**, and H. Hauser. Interactive Visual Analysis of Scientific Data. Half-day tutorial at IEEE VIS 2013, Atlanta, Georgia, USA.

Selected Talks

- 5 May 2016 Invited talk at the Data Science Institute, Lancaster University, UK. *Comparative Visual Analysis of Many Related Data Sets*
- 11 Dec. 2015 Invited talk at Otto-von-Guericke-Universität Magdeburg, Germany. *Interactive Visual Analysis of Ensemble Data*
- 26 Oct. 2015 Talk at IEEE VIS 2015, Workshop on Visualization for Decision Making under Uncertainty, Chicago, Illinois, USA. *Ensemble Data Analysis using Composite Visualizations*
- 25 Jan. 2015 Talk at Workshop on Parameter Space Analysis and Uncertainty, Technical University of Munich, Germany. *Challenges in Ensemble Visualization*
- 25 Nov. 2013 Invited talk at Karlsruhe Institute of Technology, Karlsruhe, Germany. *Visual Analysis of Multi-faceted Scientific Data: Challenges and Trends*
- 23 Feb. 2012 Talk at **Dagstuhl Seminar 12081**: Information Visualization, Visual Data Mining and Machine Learning, Dagstuhl, Germany. *Visual Analysis of Multi-faceted Scientific Data: A Survey*
- 27 May 2010 Talk at Workshop on Exploratory Data Analysis and Visualization (EDAVis), Vienna, Austria. *Selected Opportunities for Integrating Statistics and Visualization in Multi-dimensional Data Exploration*

- 21 Dec. 2009 Invited talk at Wegener Center for Climate & Global Change, Graz, Austria.
SimVis – eine neue Technologie zur interaktiven visuellen Analyse: Konzepte und Anwendungen im Umfeld der Klimaforschung
- 9 Dec. 2009 Invited talk at Potsdam Institute for Climate Impact Research, Germany.
Interactive Visual Analysis of Multi-run Climate Data
- 21 Aug. 2008 Invited talk at ClimaVis 2008, University of Bergen, Norway.
Interactive Visual Exploration of Climate Data

Academic Services

- Int'l. Program EuroVis (2017), PacificVis (2016, 2017),
Committees Int'l. Conf. Information Visualization Theory & Applications (2012, 2013)
- Journal IEEE Trans. Visualization & Computer Graphics (2009, 2011, 2014–2016), Computer
Reviews Graphics Forum (2015), The Visual Computer (2015), Computers & Graphics (2013),
ACM Trans. Interactive Intelligent Systems (2012), Electronic Letters on Computer
Vision & Image Analysis (2015), J. Earth Science Informatics (2015), J. Environmental
Modelling & Software (2016)
- Conference IEEE SciVis (2009–2016), IEEE InfoVis (2009, 2011–2016), IEEE VAST (2012–2016),
Reviews EuroVis (2008–2016), EuroVis STARs (2014, 2015), PacificVis (2010–2016), Pacific
Graphics (2015), Volume Graphics (2010), Vision, Modeling, and Visualization (2009),
TopoInVis (2009)
- Scientific Event Website and registration page for EuroVis 2011, Bergen, Norway
Organization Co-organization of ClimaVis08 & website for IllustraVis09, University of Bergen

Additional Information & Skills

- Languages German (native), English (excellent), Norwegian (good), French (basic)
- Workshops Participation in workshops on scientific writing, presentation techniques, acting,
improvisational theater, story telling, body language, and conflict management
- Personal Interests Interested in classical music, digital arts, design, psychology, and philosophy
Acting in several improvisational theater groups (since 2001)
Member in a student choir (2008–2011)
Webmaster of h.uib.no/eurovis2011, www.blak.uib.no, and www.multivis.net

References

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