

# Johannes Kehrer, PhD

## Curriculum Vitae



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### Personal Data

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Websites [wwwcg.in.tum.de/group/persons/kehrer.html](http://wwwcg.in.tum.de/group/persons/kehrer.html)  
[www.multivis.net](http://www.multivis.net)  
Born 8 April 1983 in Linz, Austria  
Nationality Austrian

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### Research Interests

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

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### Professional Experience

- since 02/2017 **Research Scientist**, Siemens AG, Corporate Technology, Munich, Germany.  
Research & development on visual analytics and explainable artificial intelligence
- 10/2017–02/2018 **External Lecturer**, Technical University of Munich, Germany.
- 10/2017–01/2018, **External Lecturer**, Univ. of Applied Sciences Upper Austria, Hagenberg.  
10/2016–01/2017 Lecturing and exercises for Master's level course "Advanced Computer Graphics"
- 04/2014–01/2017 **Postdoctoral Researcher & Lecturer**, Technical University of Munich, Computer Graphics & Visualization Group, Germany, [wwwcg.in.tum.de](http://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 12 Bachelor's theses & 2 student projects
  - Co-supervision of the PhD projects of M. Jarema and I. Demir
- 02/2013–02/2014 **Postdoctoral Researcher**, Vienna University of Technology, Institute of Computer Graphics & Algorithms, Austria, [www.cg.tuwien.ac.at](http://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](http://www.vrvis.at).  
Research & development of novel methods for comparative visual analysis
- 12/2007–11/2011 **Research & Teaching Assistant**, University of Bergen, Dept. of Informatics, Visualization Group, Norway, [www.ii.uib.no/vis](http://www.ii.uib.no/vis).
- Researching the interactive visual analysis of spatiotemporal, multivariate, and multi-run/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](http://www.aec.at).  
 Development of virtual 3D worlds for the “CAVE” and “Humphrey” flight simulator
- 03/2005–06/2005 **Intern**, Graz Univ. of Techn., Inst. f. Computer Graphics & Vision, 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.

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## 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*.

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## Teaching Activities

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### Courses at Technical University of Munich

- Winter 2014–2017 Scientific Visualization – Algorithms for Data Visualization *Lecturer*  
 Winter 2014, 2015 Seminar: How to make a Pixar movie *Seminar student supervision*

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### 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*

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### 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 *Student supervision & lab assignments*  
 Spring 2009 Selected Topics in Visualization *Discussion sessions & lab assignments*  
 Spring 2008 Computer Graphics *Student supervision, exercises & lab assignments*

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## Courses at University of Applied Sciences Upper Austria

Winter 2016/2017	Advanced Computer Graphics	Lecturer
Winter 2004	Applied Software Techniques	Lab tutor
Summer 2004	Object Oriented Programming	Lab tutor
Winter 2003	Introduction to Programming	Lab tutor

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## Awards & Scholarships

- 2016 Certificate of Merit, IEEE Scientific Visualization Contest 2016
- 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)

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## Publications

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### 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. Laramee, 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).

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### Book Chapters

- [1] D. Chung, R. Laramée, **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.

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### 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.

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### 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.

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### Selected Talks

- 10 Oct. 2016 Invited talk at Aston University, School of Engineering and Applied Science, UK. *Interactive Visual Analysis of Ensemble Data*
- 5 May 2016 Invited talk at Lancaster University, Data Science Institute, 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 Technical University of Munich, Workshop on Parameter Space Analysis and Uncertainty, Germany. *Challenges in Ensemble Visualization*
- 25 Nov. 2013 Invited talk at Karlsruhe Institute of Technology, 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*

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## Academic Services

- Int'l. Program Committees EuroVis (2017), PacificVis (2016, 2017), SCCG (2017),  
Int'l. Conf. Information Visualization Theory & Applications (2012, 2013)
- Journal Reviews IEEE Trans. Visualization & Computer Graphics (2009, 2011, 2014–2017), Computer 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 Reviews IEEE SciVis (2009–2017), IEEE InfoVis (2009, 2011–2017), IEEE VAST (2012–2017), EuroVis (2008–2017), EuroVis STARS (2014, 2015), PacificVis (2010–2017), Pacific Graphics (2015), Volume Graphics (2010), Vision, Modeling, and Visualization (2009), TopoInVis (2009)
- Scientific Event Organization Half-day tutorial at IEEE VIS 2013, Atlanta, Georgia, USA  
Local organization team for EuroVis 2011, Bergen, Norway  
Co-organization of ClimaVis08 & website for IllustraVis09, Univ. of Bergen, Norway

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## Additional Information

- 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](http://h.uib.no/eurovis2011), [www.blak.uib.no](http://www.blak.uib.no), and [www.multivis.net](http://www.multivis.net)