

Tobias Ritschel

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Born, July 31th, 1978

German

Married

EDUCATION

[March 2012 — ongoing](#)

Junior research group leader at the Max Planck Institut Informatik within the Max Planck Center for Visual Computing and Communication

[May 2010 — September 2011](#)

Post-doctoral researcher at Télécom ParisTech (ENST) / CNRS (LTCI)

[December 2009 — March 2010](#)

Researcher at the Max Planck Institut Informatik, Saarbrücken, Germany

[September 2007 — December 2009](#)

Ph. D. (*Dr.-Ing.*) in Computer Science at the Max-Planck-Institut Informatik, Saarbrücken (summa cum laude). Thesis: '*Perceptually-motivated, Interactive Rendering and Editing of Global Illumination*'. Supervisor: Prof. Dr. H.-P. Seidel.

The thesis was awarded the **Eurographics Dissertation Price 2011** (1 of 3) at Eurographics 2011, Llandudno / UK.

[May 2001—January 2007](#)

Diploma (*Dipl.-Inf.*) in Computational Visualistics at the University Koblenz-Landau. Thesis: '*Coherent Shadow Maps for Interactive High Quality Illumination*'. Supervisor: T. Grosch and Prof. Dr. S. Müller.

[1999—2000](#)

Community service for people with mental disabilities, Wiesbaden

[1998](#)

A-level from the Free Waldorf School, Wiesbaden

PUBLICATIONS

Please see <http://www.mpi-inf.mpg.de/~ritschel/> for papers, abstracts and videos.

2012

- ³⁹ **Highlight Microdisparity for Improved Gloss Depiction.** *K. Templin, P. Didyk, T. Ritschel, K. Myszkowski, H.-P. Seidel.* ACM Trans. Graph. 31(3) (Proc. SIGGRAPH 2012, Los Angeles).
- ³⁸ **State of the Art in Interactive Global Illumination.** *T. Ritschel, T. Grosch, C. Dachsbacher, J. Kautz.* Comp. Graph. Forum 31(1)
- ³⁷ **A Computational Model of Afterimages.** *T. Ritschel, E. Eisemann.* Comp. Graph. Forum 31(2) 485—492 (Proc. Eurographics 2012, May 13—18 2012, Cagliari / Italy, 2012).
- ³⁶ **Exploring Shape Variations by 3D-Model Decomposition and Part-based Recombination.** *A. Jain, T. Thormählen, T. Ritschel, H.-P. Seidel.* Comp. Graph. Forum 31(2) 485—492 (Proc. Eurographics 2012, May 13—18 2012, Cagliari / Italy, 2012).
- ³⁵ **Pre-convolved Radiance Caching.** *D. Scherzer, C. Nguyen, T. Ritschel, H.-P. Seidel.* Comp. Graph. Forum 31(4) (Proc. EGSR 2012, Paris, 4–6 June 2012).
- ³⁴ **Homunculus Warping: Conveying importance using self-intersection-free non-homogeneous mesh deformation.** *B. Reinert, T. Ritschel, H.-P. Seidel.* Comp. Graph. Forum 31(5) (Proc. Pacific Graphics 2012, Hong Kong, 12–14 September 2012).
- ³³ **Virtual Passepartouts.** *T. Ritschel, K. Tenmplin, K. Myszkowski, H.-P. Seidel.* Proc. NPAR (Annecy, June 4—6, Annecy / France 2012).
- ³² **Interactive Cloud Rendering using Temporally-coherent Photon Mapping.** *O. Elek, T. Ritschel, A. Wilkie, H.-P. Seidel.* Proc. Graphics Interface 2012.
- ³¹ **Apparent Stereo: The Cornsweet Illusion Can Enhance Perceived Depth.** *P. Didyk, T. Ritschel, E. Eisemann, K. Myszkowski, H.-P. Seidel.* Proc. SPIE (Jan. 22—26 2012, San Francisco)

2011

- ³⁰ **A Perceptual Model of Disparity.** *P. Didyk, T. Ritschel, E. Eisemann, K. Myszkowski, H.-P. Seidel.* ACM Trans. Graph. 30(3) (Proc. SIGGRAPH 2011, Vancouver / Canada).

- ²⁹ **Edge-aware Color Appearance.** *M. H. Kim, T. Ritschel, J. Kautz.* ACM Trans. Graph. 30(2) (Presented at SIGGRAPH 2011, Vancouver / Canada)
- ²⁸ **Computer-suggested Facial Makeup.** *K. Scherbaum, T. Ritschel, M. Hullin, T. Thormählen, V. Blanz, H.-P. Seidel.* Comp. Graph. Forum 30(2) 485–492 (Proc. Eurographics 2011, April 11–15 2011, Llandudno / UK, 2011). (RTT Emerging Technology Contest, 2nd price)
- ²⁷ **ManyLoDs: Parallel Many-View Level-of-Detail Selection for Real-Time Global Illumination.** *M. Holländer, T. Ritschel, E. Eisemann, T. Boubekeur.* Comp. Graph. Forum 30(4) (Proc. EGSR 2011, Prague), 2011.
- ²⁶ **Making Imperfect Shadow Maps View-adaptive: High-Quality Global Illumination in Large Dynamic Scenes.** *T. Ritschel, E. Eisemann, I. Ha, H.-P. Seidel.* Comp. Graph. Forum 30(8), 2011. (Presented at EGSR 2011, Prague)
- ²⁵ **Bent Normals and Bent Cones in Screen Space.** *O. Klehm, T. Ritschel, E. Eisemann, H.-P. Seidel.* Proc. VMV, Oct 4–6, Berlin, 2011. (Cover Image Informatik Spektrum 34 (5), 2011, Springer)
- ²⁴ **Apparent Resolution Enhancement for Animations.** *K. Templin, P. Didyk, T. Ritschel, K. Myszkowski, E. Eisemann, H.-P. Seidel.* Proc. SCCG 2011, April 28–31 2011, Bratislava / Slovakia, 2011. (2nd Best Presentation Award)
- ²³ **Fast Separable Ambient Occlusion.** *J. Huang, T. Boubekeur, T. Ritschel, M. Holländer, E. Eisemann.* Proc. Eurographics 2011 (Short Paper), April 11–15 2011, Llandudno / UK, 2011.
- ²² **Camera Animation Style Transfer.** *C. Kurz, T. Ritschel, E. Eisemann, T. Thormählen, H.-P. Seidel.* Journal of Virtual Reality and Broadcast. (Invited Article, CVMP Special Issue)
- 2010
- ²¹ **Adaptive Image-space Stereo Synthesis.** *P. Didyk, T. Ritschel, E. Eisemann, K. Myszkowski, H.-P. Seidel.* Proc. VMV 2010, November 15–17 2010, Siegen / Germany. (Cover Image Informatik Spektrum 33 (5), 2010, Springer)
- ²⁰ **Camera Animation Style Transfer.** *C. Kurz, T. Ritschel, E. Eisemann, T. Thormählen, H.-P. Seidel.* Proc. CVMP 2010, November 17–18 2010, London / UK. (Oral)
- ¹⁹ **Interactive, On-surface Signal Deformation.** *T. Ritschel, T. Thormählen, J. Kautz, C. Dachsbacher, H.-P. Seidel.* ACM Trans. Graph., 29(3) (Proc. SIGGRAPH 2010, Los Angeles).
- ¹⁸ **Apparent Display Resolution Enhancement for Moving Images.** *P. Didyk, E. Eisemann, T. Ritschel, K. Myszkowski, H.-P. Seidel.* ACM Trans. Graph., 29(3) (Proc. SIGGRAPH 2010, Los Angeles).

¹⁷ **Perceptually-motivated Real-time Temporal Upsampling of 3D Content for High-refresh-rate Displays.** *P. Didyk, E. Eisemann, T. Ritschel, K. Myszkowski, H.-P. Seidel.* *Comp. Graph. Forum* 29 (2) 713–722 (Proc. Eurographics 2010, Norrköping / Sweden. May 3–7, 2010).

2009

¹⁶ **Micro-Rendering for Scalable, Parallel Final Gathering.** *T. Ritschel, T. Engelhardt, T. Grosch, H.-P. Seidel, J. Kautz, C. Dachsbacher.* *ACM Trans. Graph.*, 28(5) (Proc. SIGGRAPH Asia 2009, Yokohama).

¹⁵ **Interactive Reflection Editing.** *T. Ritschel, M. Okabe, T. Thormählen, H. P. Seidel.* *ACM Trans. Graph.*, 28(5) (Proc. SIGGRAPH Asia 2009, Yokohama). (Cover Image *Informatik Spektrum* 33(2), 2010, Springer)

¹⁴ **Real-time Indirect Illumination with Clustered Visibility.** *Z. Dong, T. Grosch, T. Ritschel, J. Kautz, H.-P. Seidel.* *Proc. VMV 2009, Braunschweig / Germany.*

¹³ **Perceptual Influence of Approximate Visibility in Indirect Illumination.** *I. Yu, A. Cox, M. H. Kim, T. Ritschel, T. Grosch, C. Dachsbacher, J. Kautz.* *ACM Trans. Applied Perception* (Presented at APGV 2009, Chania / Crete).

¹² **Approximating Dynamic Global Illumination in Image Space.** *T. Ritschel, T. Grosch, H.-P. Seidel.* *Proc. ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games 2009 (I3D).* Boston / MA, February 30–March 1.

¹¹ **Temporal Glare: Real-Time Dynamic Simulation of the Scattering in the Human Eye.** *T. Ritschel, M. Ihrke, J.R. Frisvad, J. Coppens, K. Myszkowski, H. P. Seidel.* *Comp. Graph. Forum* 28 (2): 183–192 (Proc. Eurographics 2009, Munich).

¹⁰ **A Perceptual Evaluation of 3D Unsharp Masking.** *M. B. Ihrke, T. Ritschel, K. Smith, T. Grosch, K. Myszkowski, H.-P. Seidel.* *Proc. Human Vision and Electronic Imaging XIV (SPIE 7240), San Jose / CA.*

2008

⁹ **Imperfect Shadow Maps for Efficient Computation of Indirect Illumination.** *T. Ritschel, T. Grosch, M.-H. Kim, H.-P. Seidel, C. Dachsbacher, J. Kautz.* *ACM Trans. Graph.*, 27(5) (Proc. SIGGRAPH Asia 2008, Singapore).

⁸ **3D Unsharp Masking for Scene Coherent Enhancement.** *T. Ritschel, K. Smith, M. Ihrke, T. Grosch, K. Myszkowski, H.-P. Seidel.* *ACM Trans. Graph.*, 27(3) (Proc. SIGGRAPH 2008, Los Angeles).

⁷ **Interactive Global Illumination Based on Coherent Surface Shadow Maps.** *T. Ritschel, T. Grosch, J. Kautz, H.-P. Seidel.* *Proc. Graphics Interface 2008, Windsor / Canada, May 28–30.*

2007

⁶ **Interactive Illumination with Coherent Shadow Maps.** *T. Ritschel, T. Grosch, J. Kautz, S. Müller.* Proc. Eurographics Symposium on Rendering 2007 (EGSR), Grenoble / France, June 25—27.

⁵ **Fast GPU-based Visibility Computation for Natural Illumination of Volume Data Sets.** *T. Ritschel.* Short Paper Proc. Eurographics 2007, Prague, September 3—7.

2006

⁴ **On-line Estimation of Diffuse Materials.** *T. Ritschel, T. Grosch.* Proc. 3. GI-Fachtagung VR/AR, Koblenz / Germany, September 25—26. (Awarded 2nd best paper)

³ **Multiresolution GPU Mesh Painting.** *T. Ritschel, M. Botsch, S. Müller.* Short Paper Proc. Eurographics 2006, Vienna, September 4—8.

2005

² **The Eduventure – A New Approach of Digital Game Based Learning Combining Virtual and Mobile Augmented Reality Games Episodes.** *P. Ferdinand, S. Müller, T. Ritschel, U. Wechselberger.* Proc. DeLFI 2005 / GMW 2005, Rostock / Germany, September 13—14.

¹ **Physikalische Simulation virtueller Charaktere durch Feder-Masse-Systeme am Beispiel einer "Virtuellen Marionette".** *T. Ritschel, S. Müller.* Proc. 2. GI-Fachtagung VR/AR, Aachen / Germany, September 26—27. (Awarded 3rd best paper, German)

Book chapters

^{B3} **Screen Space Bent normals and cones: A practical approach.** *O. Klehm, T. Ritschel, E. Eisemann.* GPU Pro 2, AK Peters, 2012

^{B2} **Exceeding Physical Limitations: Apparent Display Qualities.** *P. Didyk, K. Myszkowski, T. Ritschel, E. Eisemann.* Perceptual Digital Imaging: Methods and Applications, CRC Press, 2012

^{B1} **Screen-Space Directional Occlusion.** *T. Grosch, T. Ritschel.* GPU Pro, AK Peters, 2010

Courses

^{C1} **Mapping images to target devices: spatial, temporal, stereo, tone, and color.** *A. Artusi, T. Aydin, F. Banterle, P. Didyk, E. Eisemann, D. Gutierrez, R. Mantiuk, T. Ritschel.* Eurographics 2012 course

Talks

^{T6} **Fakeup: Computer-suggested Facial Makeup.** *K. Scherbaum, T. Ritschel, M. Hullin, T. Thormählen.* FMX ICC, May 6th, Stuttgart / Germany, 2011.

^{T5} **Interactive On-Surface signal deformation.** GT Rendu, October 8, Paris / France, 2010. (Conference talk)

^{T4} **Perceptually-motivated, Interactive Rendering, Intuitive Editing and Display of 3D content.** Black Rock Studios Render Club, September 9, Brighton / UK, 2010. (Invited talk)

^{T3} **A Question of Time: Importance and Possibilities of High Refresh-rates.** P. Didyk, E. Eisemann, T. Ritschel, K. Myszkowski, H.-P. Seidel, Visual Computing Research Conference, December 8–10, Saarbrücken / Germany, 2009. (Conference talk)

^{T2} **Efficient, Physically Plausible and Perceptually Justified High-Quality-Illumination: What was Done Before and What Needs to be Done?** Crytek Conference 2010, November 26–27, Frankfurt am Main / Germany, 2010. (Invited talk)

^{T1} **Perception-Based, Efficient Real-Time Graphics: (GPU)-Rendering of Lights and Shadows You Really See.** DTU Vision Days '09, Copenhagen / Denmark, May 29, 2009. (Keynote)

Talks at KIT / U. Karlsruhe, UCL / London, Paris Tech / CNRS, ARTIS Grenoble / INRIA, VISUS / U. Stuttgart and the RWTH Aachen.

Installations

Virtual Puppet (Paper 1), at IEEE VR 2005, Bonn; now permanently at the Cybernarium Darmstadt, Germany.

Teaching

Visual Computing Techniques for Efficient Content Production (Seminar, Saarland U '12)

WORK EXPERIENCE

Academia

Program committee: EGSR 2012, ACM I3D 2012

Reviewing: ACM Trans. Graph. (SIGGRAPH 2009 — 2012, SIGGRAPH Asia 2009 — 2012), Eurographics 2008 — 2012, Pacific Graphics 2009—2011, Graphics Interface 2010, IEEE TVCG 2011, ACM Trans. Applied Perception 2012, The Visual Computer 2010-2012, CGF 2011—2012, IEEE Vis 2009 and 2011, EGSR 2009— 2012, HPG 2012, IEEE Raytracing 2008, Computer Graphics & Applications 2010, WSCG 2008—2012, SCCG 2008, Graphicon 2008 and 2009.

Patents

Apparent display resolution enhancement for moving images (EP 2 383 695 A1 | 2. 11. 2011). P. Didyk, T. Ritschel, K. Myszkowski, H.-P. Seidel and E. Eisemann.

Methods and device for processing digital stereo image content

(Application). P. Didyk, T. Ritschel, K. Myszkowski, E. Eisemann and H.-P. Seidel.

Industry

May 2007 — September 2007

Research and development for Skymatter's Mudbox 2009, a digital sculpting software used in feature films like King Kong, acquired by Autodesk in 2007.

March 2005 — December 2006

Student assistant in computer graphics University Koblenz-Landau.

2000 — 2005

Freelancing. 3d programming and animation, web programming, graphics design. Clients include Antwerpes AG, Artec Messebau, Chairios, Rendoscopy AG, Software Academy, Serious Magic, and zSE Wiesbaden.

1999 — 2000

Database programming for Software Academy, Wiesbaden.

Demoscene

1997 — 2004

Active in the demo scene (www.scene.org). Co-founded and organized the demo group Kolor (www.kolor.org). Brought together programmers, artists and musicians from many different countries to create demos. Took part in organizing several demo parties, chaired competitions, designed flyers, posters and clothing.

DEMOS

Please see Kolor's webpage www.kolor.org for the binaries, screenshots or videos and further information.

Relais – PC Demo, 2nd at Breakpoint 2003.

Most important demo competition in that time. Scene.org award "Best Graphics" 2003. Selected for screening at Ars Electronica 2005.

Gracchus – PC 4k Demo, 1st at Evoke 2002.

Scene.org nomination for Best 4k 2002.

Le Petit Prince – PC Demo, 1st at Mekka / Symposium 2001.

Most important demo competition in that time.

Fresnel – 64k Demo, 1st at Dialogos 1999.

First demonstration of hardware-accelerated real-time ray-tracing.

Overall 3d programming and graphics for 20 productions with Kolor and others, since 1997. Many of them had press and television coverage and screenings at several international film and animation festivals.

SKILLS

C++, C#, x86 Assembler, OpenGL, GLSL, CUDA, OpenCL, Cg, PHP, HTML, SQL, Delphi, 3ds max, Blender, After Effects, Photoshop, Illustrator, LaTeX, Office

PERSONAL

Long distance running, hiking, cooking, fine arts, arts history, travelling.