Curriculum Vitae

Personal Information

Name:	Oliver Mattausch	
Academic Degree:	Dr. Dipl.-Inf.	
Address:	Ledererg. 5/3, 2700 Wr. Neustadt	
Email:	oliver.mattausch@vision.ee.ethz.ch	
Date of birth:	Dec. 2., 1976	
Nationality:	Austria	
Marital status:	Single, no children	
Languages:	German, English, Japanese	
Current Employer:	ETH Zurich	

Education

Sep. 1983 – June 1987	Elementary School (Grundschule) in Wiener Neustadt
Sep. 1987 – June 1995	Secondary School (Gymnasium) in Wiener Neustadt
June 1995	Graduation (Matura)
Oct. 1995 – June 2000	Japanology and History major at University of Vienna, Austria
Oct. 1996 – Sep. 2000 Oct. 2001 – Jan. 2004	Computer Science major at Vienna University of Technology (technical computer science track)
Oct. 2000 – Sep. 2001	Japanese studies at Tokyo Gakugei University (mit Monbusho Scholarship)
Jan. 2004	Graduation as "Diplom-Ingenieur der Informatik" from Vienna University of Technology
Jan. 2005 – Apr. 2010	Doctoral Program at Vienna University of Technology
Apr. 2010	Received Ph.D. in Computer Science from Vienna University of Technology
Okt. 2014	CUDA Course at HLRS Stuttgart

Professional

Apr. 2004 – Dec. 2004	Software engineer at the VRVis Research Center, Vienna
Jan. 2005 – Sep. 2011	Project assistant at the Institute of Computer Graphics, Vienna University of Technology

Sep. 2011 – Dec. 2011	JSPS visiting researcher at The Tokyo University/ERATO (supervised by Prof. Takeo Igarashi)
Feb. 2012 – Sep. 2014	Postdoctoral researcher at the University of Zurich (VMML Lab)
Okt. 2014 – Nov. 2016	Postdoctoral researcher in Computer Vision Group at ETH

Project Participation

Apr. 2004 – Dec. 2004	**Real Reflect,** EU project (as software engineer)
Dec.2004 – June 2007	**GameTools**, EU project
Juli 2007 – Aug. 2008	**CrossMod,** EU project
Juli 2007 – Aug. 2011	**General Purpose Visibility,** FWF project
Feb. 2012 – Feb. 2013	**DIVA**, Marie-Curie Initial Training Network
Okt. 2014 – Nov. 2016	**UltraVR**, CTI project in collaboration with company Virtamed

Scholarships/Awards/Project Proposals

2000	Monbusho Scholarship for Japanese language students
2008	FWF Austrian Science Fund Accepted Project Proposal
2010	Best Paper Award ISMAR 2010 (as co-author)
2011	Japan Society for the Promotion of Science (JSPS) Postdoctoral Fellowship
2012	Marie Curie Fellowship (as part of DIVA EU project)
2016	Nvidia Hardware Grant (GPU donation)
2016	Best Paper Award EG VCBM 2016
2016	Best Student Paper Award Pacific Graphics 2016 (as co-author)
2017	Best Paper Runner up IPCAI 2017 (as co-author)
2017	Best Paper Runner up MICCAI IJCARS (as co-author)

Patents

1. Orcun Goksel, Oliver Mattausch
   Method and Apparatus for Generating an Ultrasound Scatterer Representation (pending), June 2015

2. Oliver Mattausch, Orcun Goksel
   Ray-tracing Methods for Realistic Interactive Ultrasound Simulation (pending), Sep. 2016

Programming

Trained in C, C++ Java, OpenGL/OpenGL ES/GL shader language, GPU programming (CUDA), Matlab, PHP, XML/HTML, Delphi
Operating Systems/environments: Windows/Linux/Cygwin, Visual Studio, Emacs
Versioning: GitHub/SVN

Professional Skills

3D modeling (Autodesk Maya, Blender), Adobe Premiere, Adobe Photoshop, Adobe Illustrator, Powerpoint, Excel, Confluence, mesh and point-cloud processing (Meshlab, PCL Point Cloud Library), graphics engine programming (Ogre3D, Nvidia Optix), convex optimization software (CVX, Yall1), FieldII (ultrasound image simulation software)

Teaching/Supervision

2005 – 2016	Supervision of diploma theses and student projects
Juli 2011	"Real-Time Rendering" Course at the Summer School of UCI (Universidad de las Ciencias Informáticas) in Havanna, Cuba
Spring 2012/2013	Organized Computer Graphics Seminar at University of Zurich
Autumn 2012	Organized Computer Graphics Lab at University of Zurich
Autumn 2013	Lecturer for Computer Graphics Course at University of Zurich

Organization

Apr. 2008 – Apr. 2010	Central European Seminar on Computer Graphics
Jun. 2012	DIVA Summer School at the University of Zurich

International Program Commitees

Eurographics 2012 Posters, Pacific Graphics 2012, VISIGRAPP 2014, 2015, Siggrad 2014, Web3D 2014, Eurographics 2015, Eurographics 2015 STARs

Referee

Reviewer for Siggraph, Eurographics, EGSR, Pacific Graphics, I3D, Transactions on Graphics, Computer Graphics Forum, IEEE Visualization, Computers & Graphics, etc.

Publications

Full conference papers

1. Oliver Mattausch, Thomas Theußl, Helwig Hauser, Meister Eduard Gröller
   Strategies for Interactive Exploration of 3D Flow Using Evenly-Spaced Illuminated Streamlines
   Proc. of Spring Conference on Computer Graphics, Apr. 2003, Budmerice, Slovakia

2. Oliver Mattausch, Jiří Bittner, Michael Wimmer
   Adaptive Visibility-Driven View Cell Construction
   Proc. of Eurographics Symposium on Rendering, June 2006, Nicosia, Cyprus

3. Oliver Mattausch, Jiří Bittner, Peter Wonka, Michael Wimmer
   Optimized Subdivisions for Preprocessed Visibility
   Proc. of Graphics Interface, May 2007, Montreal, Canada

4. Daniel Scherzer, Michael Schwärzler, Oliver Mattausch, Michael Wimmer
   Real-Time Soft Shadows Using Temporal Coherence
   Advances in Visual Computing, Dec. 2009, Las Vegas, USA

5. Daniel Scherzer, Lei Yang, Oliver Mattausch
   Exploiting Temporal Coherence in Real-Time Rendering
   Siggraph Asia Courses, Dec. 2010, Seoul, South Korea

6. Martin Knecht, Christoph Traxler, Oliver Mattausch, Werner Purgathofer, Michael Wimmer
   Differential Instant Radiosity for Mixed Reality
   Proc. of IEEE International Symposium on Mixed and Augmented Reality, Oct. 2010, Seoul, South Korea

7. Jiří Bittner, Oliver Mattausch, Ari Silvennoinen, Michael Wimmer
   Shadow Caster Culling for Efficient Shadow Mapping
   Proc. of ACM Symposium on Interactive 3D Graphics and Games, Feb. 2011, San Francisco, USA

8. Daniel Scherzer, Lei Yang, Oliver Mattausch, Diego Nehab, Pedro V. Sander, Michael Wimmer, Elmar Eisemann
   A Survey on Temporal Coherence Methods in Real-Time Rendering
   Eurographics State of the Art Reports, Apr. 2011, Llanduno, Wales

9. Michael Schwärzler, Oliver Mattausch, Daniel Scherzer, Michael Wimmer
   Fast Accurate Soft Shadows with Adaptive Light Source Sampling
   Proc. of Vision, Modeling, and Visualization, Nov. 2012, Magdeburg, Germany

10. Claudio Mura, Oliver Mattausch, Alberto Jaspe Villanueva, Enrico Gobbetti, Renato Pajarola
    Robust Reconstruction of Interior Building Structures with Multiple Rooms under Clutter and Occlusions
    Proc. of IEEE Conference on Computer Aided Design and Computer Graphics, Nov. 2013, Hong Kong, China

11. Oliver Mattausch and Orcun Goksel
    Scatterer Reconstruction and Parametrization of Homogeneous Tissue for Ultrasound Image Simulation
    Proc. of Engineering in Medicine and Biology Conference (EMBC), Aug. 2015, Milano, Italy

12. Christine Tanner, Barbara Flach, Celine Eggenberger, Oliver Mattausch, Michael Bajka, Orcun Goksel
    4D Reconstruction of Fetal Heart Ultrasound Images in Presence of Fetal Motion
    Proc. of Conference on Medical Imaging Computing & Computer-Assisted Intervention (MICCAI), Oct. 2016, Athens, Greece

13. Oliver Mattausch, Orcun Goksel
    Image-based PSF Estimation for Ultrasound Training Simulation
    Workshop on Simulation and Synthesis in Medical Imaging (SASHIMI), Oct 2016, Athens, Greece

14. Oliver Mattausch, Orcun Goksel
    Monte-Carlo Ray Tracing for Realistic Ultrasound Training Simulation
    Workshop on Simulation and Synthesis in Medical Imaging (VMBC), Sep. 2016, Bergen, Norway **(won Best Paper Award)**

15. Oliver Mattausch, Kenneth Vanhoey, Orcun Goksel
    Comparison of Texture Synthesis Methods for Content Generation in Ultrasound Training Simulation
    SPIE Medical Imaging, Feb. 2017, Orlando, US

Journal Publications

1. Oliver Mattausch, Daniel Scherzer, Michael Wimmer
   High-Quality Screen-Space Ambient Occlusion using Temporal Coherence
   Computer Graphics Forum, Dec. 2010 **(presented at Eurographics 2011)**

2. Daniel Scherzer, Lei Yang, Oliver Mattausch, Diego Nehab, Pedro V. Sander, Michael Wimmer, Elmar Eisemann
   Temporal Coherence Methods in Real-Time Rendering
   Computer Graphics Forum, Dec. 2012 **(presented at Eurographics 2013)**

3. Martin Knecht, Christoph Traxler, Oliver Mattausch, Michael Wimmer
   Reciprocal Shading for Mixed Reality
   Computers & Graphics, Nov. 2012

4. Michael Hecher, Matthias Bernhard, Oliver Mattausch, Daniel Scherzer, Michael Wimmer
   A Comparative Perceptual Study of Soft Shadow Algorithms
   ACM Transactions on Applied Perception, 2014

5. Claudio Mura, Oliver Mattausch, Alberto Jaspe Villanueva, Enrico Gobbetti, Renato Pajarola
   Automatic Room Detection and Reconstruction in Cluttered Indoor Environments with Complex Room Layouts
   Computers & Graphics, 2016

6. Oliver Mattausch, Maxim Makhinya, Orcun Goksel
   Realistic Ultrasound Simulation of Complex Surface Models Using Interactive Monte-Carlo Path Tracing
   Computer Graphics Forum, 2017

7. Christine Tanner, Barbara Flach, Celine Eggenberger, Oliver Mattausch, Michael Bajka, Orcun Goksel
   Consistent reconstruction of 4D fetal heart ultrasound images to cope with fetal motion
   International Journal of Computer Assisted Radiology, 2017 **(won Best Paper Runner-up)**

Conference with Journal Publications

1. Oliver Mattausch, Jiří Bittner, Michael Wimmer
   CHC++: Coherent Hierarchical Culling Revisited
   Computer Graphics Forum **(Eurographics 2008)**, Apr. 2008, Crete

2. Jiří Bittner, Oliver Mattausch, Peter Wonka, Vlastimil Havran, Michael Wimmer
   Adaptive Global Visibility Sampling
   ACM Transactions of Graphics **(Siggraph 2009)**, July 2009, New Orleans, USA

3. Oliver Mattausch, Daniel Scherzer, Michael Wimmer, Takeo Igarashi
   Tessellation-Independent Smooth Shadow Boundaries
   Computer Graphics Forum **(Eurographics Symposium on Rendering 2012)**, June 2012, Paris, France

4. Oliver Mattausch, Takeo Igarashi, Michael Wimmer
   Freeform Shadow Boundary Editing
   Computer Graphics Forum **(Eurographics 2013)**, May 2013, Girona, Spain

5. Oliver Mattausch, Daniele Panozzo, Claudio Mura, Olga Sorkine, Renato Pajarola
   Object Detection and Classification from Large-Scale Cluttered Indoor Scans
   Computer Graphics Forum **(Eurographics 2014)**, Apr. 2014, Strasbourg, France

6. Reinhold Preiner, Oliver Mattausch, Murat Arikan, Renato Pajarola, Michael Wimmer
   Continuous Projection for Fast L1 Reconstruction
   ACM Transactions on Graphics **(Siggraph 2014)**, Aug. 2014, Vancouver, USA

7. Oliver Mattausch, Jiří Bittner, Alberto Jaspe Villanueva, Enrico Gobbetti, Michael Wimmer, Renato Pajarola
   CHC+RT: Coherent Hierarchical Culling for Ray Tracing
   Computer Graphics Forum **(Eurographics 2015)**, Apr. 2014, Zurich, Switzerland

8. Claudio Mura, Oliver Mattausch, Renato Pajarola
   Piecewise-planar Reconstruction of Multi-room Interiors with Arbitrary Wall Arrangements
   Computer Graphics Forum **(Pacific Graphics 2016)**, Oct. 2016, Okinawa, Japan **(won Best Student Paper Award)**

9. Ece Ozkan, Christine Tanner, Matej Kastelic, Oliver Mattausch, Maxim Makhinya, Orcun Goksel
   Robust Motion Tracking in Liver from 2D Ultrasound Images Using Supporters
   International Journal of Computer Assisted Radiology and Surgery **(IPCAI 2017)**, June 2017, Barcelona, Spain **(won Best Paper Runner-up)**

Other Publications

1. Thomas Theußl, Oliver Mattausch, Torsten Möller, Eduard Gröller
   Reconstruction Schemes for High Quality Raycasting of the Body-Centered Cubic Grid
   Technical Report (TR-186-2-02-11), Dec. 2002, Vienna, Austria

2. Oliver Mattausch
   Practical reconstruction and hardware-accelerated direct volume rendering on body-centered cubic grids
   Proc. of Central European Seminar on Computer Graphics, Apr. 2004, Budmerice, Slovakia

3. Claudio Mura, Alberto Jaspe Villanueva, Oliver Mattausch, Enrico Gobbetti and Renato Pajarola
   Reconstructing Complex Indoor Environments with Arbitrary Walls Orientations
   Proc. of Eurographics Posters, Apr. 2014, Strasbourg, France

4. Claudio Mura, Oliver Mattausch, Alberto Jaspe Villanueva, Enrico Gobbetti and Renato Pajarola
   Automatic Room Detection and Reconstruction in Cluttered Indoor Environments with Complex Room Layouts
   Invited CaC Talk at SCCG, Apr. 2015, Budmerice, Slovakia

Theses

1. Practical Reconstruction Schemes and Hardware-Accelerated Direct Volume Rendering on Body-Centered Cubic Grids
   M.Sc. Thesis, Institute of Computer Graphics and Algorithms, Vienna University of Technology, Dec. 2003

2. Visibility Computations for Real-Time Rendering in General 3D Environments
   PhD-Thesis, Institute of Computer Graphics and Algorithms, Vienna University of Technology, Apr. 2010

Articles in Books

1. Jiří Bittner, Oliver Mattausch, Michael Wimmer
   Game-Engine-Friendly Occlusion Culling
   SHADERX7: Advanced Rendering Techniques, 2009

2. Oliver Mattausch, Daniel Scherzer, Michael Wimmer,
   Temporal Screen-Space Ambient Occlusion
   GPU Pro 2 , 2011

3. Daniel Scherzer, Michael Schwärzler, Oliver Mattausch
   Fast Soft Shadows with Temporal Coherence
   GPU Pro 2, 2011

4. Oliver Mattausch, Jiří Bittner, Ari Silvennoinnen, Daniel Scherzer, Michael Wimmer
   Efficient Online Visibility for Shadow Maps
   GPU Pro 3, 2012

5. Daniel Scherzer, Florian Bagar, Oliver Mattausch
   Volumetric Real-Time Water and Foam Rendering
   GPU Pro 3, 2012

6. Rene Fürst, Oliver Mattausch, Daniel Scherzer
   Real-time Deep Shadow Maps
   GPU Pro 4, 2013

Books

1. Oliver Mattausch
   Visibility Algorithms for Real-Time Rendering
   Suedwestdeutscher Verlag fuer Hochschulschriften, Oct. 2010

Talks at Conferences

1. Strategies for Interactive Exploration of 3D Flow Using Evenly-Spaced Illuminated Streamlines, SCCG, Apr. 2003, Budmerice, Slovakia

2. Practical reconstruction and hardware-accelerated direct volume rendering on body-centered cubic grids, CESCG, Apr. 2004, Budmerice, Slovakia

3. Adaptive Visibility-Driven View Cell Construction.
   Eurographics Workshop on Rendering, June 2006, Nicosia, Cyprus

4. Optimized Subdivisions for Preprocessed Visibility.
   Graphics Interface, May 2007, Montreal, Canada

5. CHC++: Coherent Hierarchical Culling Revisited, Eurographics, Apr. 2008, Crete

6. Adaptive Global Visibility Sampling, Siggraph, July 2009, New Orleans, USA

7. High-Quality Screen-Space Ambient Occlusion Using Temporal Coherence,
   Eurographics, Apr. 2011, Wales, Llandudno

8. A Survey on Temporal Coherence Methods in Real-Time Rendering, Eurographics,
   Apr. 2011, Wales, Llandudno

9. Tessellation-Independent Smooth Shadow Boundaries, Symposium on Rendering,
   Jun. 2012, Paris, France

10. Freeform Shadow Boundary Editing, Eurographics,
    Mai 2013, Girona, Spain

11. Object Detection and Classification from Large-Scale Cluttered Indoor Scans
    Eurographics, Apr. 2014, Strasbourg, France

12. CHC+RT: Coherent Hierarchical Culling for Ray Tracing
    Eurographics, Apr. 2015, Zurich, Switzerland

13. Monte-Carlo Ray-Tracing for Realistic Interactive Ultrasound Simulation, VMBC,
    Sep. 2016, Bergen, Norway

14. Image-based PSF Estimation for Ultrasound Training Simulation, SASHIMI, Oct.
    2016, Athens, Greece

Invited Talks

1. Adaptive Visibility-Driven View Cell Construction.
   Prague University of Technology, Prague, Dec. 2007

2. Visibility Computations in Real-Time Rendering,
   Disney Research (ETH), Zürich, June 2011

3. Freeform Shadow Boundary Editing
   University of Tokyo (Nishita Group), Tokyo, Nov. 2011

4. Freeform Shadow Boundary Editing
   OML, Tokyo, Dec. 2011

5. Object Detection and Classification from Large-Scale Cluttered Indoor Scans
   ETH (Interactive Geometry Lab), Zurich, March 2013

6. New Methods for Indoor Scan Processing and Online Reconstruction
   EPFL (Applied Geometry Group), Lausanne, March 2014

7. Robust Reconstruction for Online Scanning
   ETH (Vision Group), Zurich, July 2014

Courses

1. Exploiting Temporal Coherence in Real-Time Rendering
   Siggraph Asia Courses, Dec. 2010, Seoul, South Korea

2. Industry course: Parallel and GPU programming
   Noser AG Course at University of Zurich, Jan. 2013, Zurich, Switzerland

3. Presentation at EXCITE Summer School in Biomedical Imaging 2015

Oliver Mattausch, Feb. 2017, Vienna