

Curriculum Vitae

Peter Wonka, August 2009
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Personal Information

- Name: Peter Wonka (Dipl.-Ing. Dipl.-Ing. Dr.techn.)
- Date of birth: 10/08/1975
- Place of birth: Vienna, Austria
- Languages: English, German, French

Professional Preparation

- Vienna University of Technology, M.S., Computer Science, 1997 (Dipl.-Ing. – 5 year degree)
- Vienna University of Technology, Ph.D., Computer Science, 2001 (Dr. techn.)
- Vienna University of Technology, M.S., Urban Planning, 2002 (Dipl.-Ing. – 5 year degree)

Appointments

- Aug 2004 – current: Assistant Professor, Arizona State University, USA
- Aug 2002 – Aug 2004: Postdoctoral Researcher, Georgia Institute of Technology, USA
- Oct 1997 – Aug 2002: Research Assistant, Vienna University of Technology, Austria
- June 2000 - Jan 2001: Researcher, UJF Grenoble (iMAGIS - GRAVIR/IMAG, INRIA), France
- March 2000 – June 2000: Lecturer, Fachhochschule Hagenberg, Austria
- March 1999 – June 1999: Lecturer, Fachhochschule Hagenberg, Austria
- Sept 1998 – Jan 1999: Researcher, University of Rennes I, France

Awards and Stipends:

- NSF CAREER Award, 2006.
- Best Proposal Award for GAMEWORLD, 2006.
- Best Paper Award at VAST 2006 – 2nd place
(Eurographics Symposium on Virtual Reality, Archaeology and Cultural Heritage)
- Erwin Schrödinger Fellowship 2003
- Erwin Schrödinger Fellowship 2002
- Günther Enderle Award for the best paper at Eurographics 2001
- Best Student Paper Award at Eurographics 2001

Conference Activities - Program Committee Member:

- ACM Siggraph 2009
- IEEE Visualization 2009
- Eurographics Symposium on Rendering 2003, 2007, 2008
- ACM Symposium on Interactive 3D Graphics 2007, 2008, 2009
- IEEE Symposium of Interactive Ray Tracing 2007, 2008
- Eurographics Short Paper 2007
- Pacific Graphics 2004

Conference Activities - Organization

- IEEE Symposium of Interactive Ray Tracing, Treasurer, 2008

Conference Activities - Reviewing

- SIGGRAPH Conference
- SIGGRAPH Asia
- SIGGRAPH Symposium on Interactive 3D Graphics
- IEEE Visualization
- IEEE Virtual Reality
- IEEE Symposium on Interactive Ray Tracing
- EUROGRAPHICS Annual Conference
- EUROGRAPHICS Workshop on Rendering
- EUROGRAPHICS Workshop on Virtual Environments
- EUROGRAPHICS Workshop on Computational Aesthetics
- Joint EUROGRAPHICS - IEEE TCVG Symposium on Visualization
- Virtual Reality Modeling Language Symposium
- AAPR conference
- Summer Conference on Computer Graphics (Bratislava, Slovakia)
- Shape Modeling International
- Winter School on Computer Graphics (Plzen, Czech Republic)
- Pacific Graphics
- Graphics Interface

Journal Guest Editor

- IEEE Computer Graphics and Applications, 2008

Journal Referee Service

- IEEE Transactions on Visualization and Computer Graphics (TVCG)
- ACM Transactions on Graphics (TOG)
- Computer Graphics Forum
- IEEE Computer Graphics and Applications
- Visual Computer
- International Journal of Computers and Application
- Graphical Models
- Computers and Graphics

Proposal Reviewer Service

- National Science Foundation
- Science Foundation Ireland
- Thompson Publishing

Department Committee Service

- Graduate Admissions Committee 2004, 2005, 2006, 2007
- Computing Resources Committee 2007, 2008
- Faculty Hiring Committee 2008 (Chair)

Local Professional Committees

- Intel Science Fair 2005

Invited Presentations

1. Lawrence Livermore National Laboratory, "Remote Sensing Research at PRISM", December 2008
2. University of Girona, "Procedural Modeling of Urban Environments", July 2008
3. VRVIS Vienna, "Modeling of Urban Environments", June 2008
4. Technical University of Vienna, "Computer Graphics Education for Graduate Students", June 2008
5. Google Research, California, "Urban Reconstruction & Modeling for Building Virtual Worlds", March 2008
6. University of Utah, "Modeling and Visualization of Urban Environments", November 2007
7. Oregon State University, February 2007
8. Valve, Seattle, October 2006
9. Universitaet Stuttgart, September 2006
10. Intel Research, Santa Clara, February 2006
11. Eidgenössische Technische Hochschule Zürich (ETH), July 2005
12. Eidgenössische Technische Hochschule Zürich (ETH), June 2004
13. Simon Frasier University, April 2004
14. Arizona State University, April 2004
15. Stony Brook University, March, 2004
16. University College London, England, June 2002
17. Graz University of Technology, Graz, Austria, May 2001
18. Karlava University of Prague, Prague, Czech Republic, April 2001
19. iMAGIS seminar, Grenoble, France, March 2000
20. University of Rennes I, Rennes, France, January 1999

Teaching

- Introduction to ASU (ASU 101), Arizona State University, Fall 2008
- Graphics for Games (CPI411), Arizona State University, Spring 2009
- Real-time Rendering (CSE 591), Arizona State University, Spring 2005, Spring 2007, Spring 2008
- Advanced Computer Graphics (CSE 570), Arizona State University, Spring 2006, Spring 2008
- Introduction to Computer Graphics (CSE 470), Arizona State University, Fall 2005, Fall 2006, Fall 2007
- Introduction to Theoretical Computer Science (CSE355), Arizona State University, Spring 2005
- Multi-media Programming (MMP6), Fachhochschule Hagenberg, Spring 1999, Spring 2000

Courses at Conferences and Workshops

1. **Modeling the Appearance and Behavior of Urban Spaces**
Carlos Vanegas, Daniel G. Aliaga, Pascal Müller, Paul Waddell, Ben Watson, Peter Wonka
Eurographics 2009 State of the Art Report
2. **Urban Design and Procedural Modeling.**
B. Watson, P. Müller, P. Wonka and A. Fuller.
Course Notes of the ACM SIGGRAPH 2007.
3. **Procedural Modeling of Urban Environments.**
Peter Wonka, Ben Watson, Pascal Mueller, Eric Haines.
Siggraph Course #10. 2006.

Current Projects

Notes: The percentages indicate the allocated recognition for each project as tracked by ASU.

- CAREER: Constrained Procedural Urban Modeling.
Peter Wonka (PI, 100%),
NSF. 2007 – 2012. 5 yrs. \$400K
- Visual Geo-Analytics
Peter Wonka (PI, 50%), Anshuman Razdan (Co-PI), Elisabeth Wentz (Co-PI)
NSF. 2006 – 2009. 3 yrs. \$623K
- CPA-G&V: Tensor Factory
Peter Wonka (PI, 50%), Jieping Ye (Co-PI)
NSF. 2008 – 2011. 3 yrs. \$299K
- Pilot: SOUZOU - Creativity through Procedural Modeling
Yoshihiro Kobayashi (PI), Peter Wonka (Co-PI, 50%)
NSF. 2008 – 2010. 2 yrs. \$199K
- Gameworld.
Michael Wimmer(PI), Peter Wonka(Co-PI, 100K Euro subcontract), Harald Riegler (Co-PI)
FIT-IT. 2007 – 2010. 3 yrs. 500K Euro
- Integrated Spectral Dimensionality Reduction.
Jieping Ye (PI), Peter Wonka (Co-PI, 25%), Anshuman Razdan (Co-PI)
NGA. 2008 – 2010. 2 yrs. \$300K
- Innovative 2D/3D Building, Asset, and Resource Tracking Visualization Tool.
Kutta Consultion (PI), A. Razdan (Co-PI), Peter Wonka (Co-PI, ~20%)
SBIR. 2007 – 2010. 2.5 yrs. Phase I \$100K + Phase II \$450K.
- Procedural Details
Peter Wonka (PI, 80%), Jieping Ye (Co-PI)
NVIDIA. 2008. 6 months. 2008. \$25K
- Interactive Procedural Urban Reconstruction from Aerial Images
Peter Wonka (PI 100%). 2008. \$40000 USD

Completed Projects

- Geometry-based Feature Extraction and Analysis for Geospatial Datasets
Anshuman Razdan (PI), Peter Wonka (Co-PI, 50%)
NGA. 2005 – 2008. 3 yrs. \$450K
- Image-based Simplification for 3D GIS.
Peter Wonka (PI)
2002 – 2004, Austrian Science Fund (FWF), 70K Euro

Recent Collaborators (2 years) and Advisors

- Dieter Schmalstieg (TU Graz), PhD advisor
- William Ribarsky (UNC-C), postdoctoral advisor
- Jiri Bittner (Prag), collaborator
- Mateu Sbert (Girona), collaborator
- Michael Wimmer (TU Vienna), collaborator
- Pascal Mueller (ETH Zuerich), collaborator
- Luv Van Gool (ETH Zuerich), collaborator
- Markus Gross (ETH Zuerich), collaborator
- Eugene Zhang (OSU), collaborator

Masters Thesis Awarded

- Saif Ali (MS), graduated 2007, first employment: AMD
- Kaichi Zhou (MS), graduated 2008, first employment: NVIDIA
- Deepali Bhagvat (MS), graduated 2008, first employment: Microsoft

Doctoral Dissertations Awarded

- Pushpak Kartnik, graduated August 2009

Current Graduate Students

- Ming Cui (PhD), expected graduation 2009
- Yuanyuan Li (PhD)
- Fan Bao (PhD)
- Ji Liu (PhD)
- Xuetao Yin(PhD)

Post-Doctoral Researchers and Visitors

- David Cline, 2007 – 2009
- Tom Kelly, 2009 - current
- Stefan Jeschke, 2007 – 2009
- Fu Yinghua, 2007

Undergraduate Projects Supervised

- Sean Williams Spring 2006 – Fulton Research Initiative for Undergraduates
- Seth Carpenter Spring 2006 - Fulton Research Initiative for Undergraduates
- Jacob Boyle Fall 2006 - Fulton Research Initiative for Undergraduates
- Robert Nelson Spring 2008 - Fulton Research Initiative for Undergraduates

Refereed Archival Journal Publications

Notes: ASU students are marked in italics. In Computer Graphics and Visualization many conferences publish the proceedings as special issues of journals. For example ACM SIGGRAPH has published proceedings in ACM TOG since 2002 and IEEE Visualization has published proceedings in IEEE TVCG since 2006.

1. **Adaptive Global Visibility Sampling**
Jiri Bittner, Oliver Mattausch, Peter Wonka, Vlastimil Havran, Michael Wimmer
ACM Transactions on Graphics. volume 28, number 3, article #94, pages 1-10. 2009.
(Proceedings of SIGGRAPH 2009)
2. **A Minimal Surface Poisson Solver for Diffusion Curves and Image Editing**
Stefan Jeschke, David Cline, Peter Wonka
ACM Transactions on Graphics. 2009.
(conditionally accepted to SIGGRAPH ASIA 2009)
3. **Rendering Surface Details with Diffusion Curves**
Stefan Jeschke, David Cline, Peter Wonka
ACM Transactions on Graphics. 2009.
(conditionally accepted to SIGGRAPH ASIA 2009)
4. **Compressed Façade Displacement Mapping**
Saif Ali, Jieping Ye, Anshuman Razdan, Peter Wonka
IEEE Transactions on Visualization and Computer Graphics, volume 15. number 2. pages 262-273. 2009.
5. **Route Visualization using Detail Lenses**
Pushpak Kartnik, David Cline, Stefan Jeschke, Anshuman Razdan, Peter Wonka
IEEE Transactions on Visualization and Computer Graphics, volume XX. number XX. pages XX – XX. 2009.
(accepted for publication)
6. **Interactive Hyperspectral Image Visualization Using Convex Optimization**
Ming Cui, Anshuman Razdan, Jiuxiang Hu, and Peter Wonka
IEEE Transactions on Geoscience and Remote Sensing. volume 47. number 6. pages 1673-1684. 2009.
7. **Interactive Geometric Simulation of 4D Cities**
Basil Weber, Pascal Mueller, Peter Wonka, Markus Gross
Computer Graphics Forum, volume 28, number 2. pages 481-492. 2009.
(Proceedings of Eurographics 2009)
8. **Dart throwing on surfaces**
David Cline, Stefan Jeschke, Anshuman Razdan, Kenric White, Peter Wonka
Computer Graphics Forum, volume 28, number 4. pages 1217-1226. 2009.
(Proceedings of Eurographics Symposium on Rendering)
9. **A Shape Grammar for Developing Glyph-based Visualizations**
P. Karnick, S. Jeschke, D. Cline, A. Razdan, E. Wentz, P. Wonka
Computer Graphics Forum, volume XX, number XX. Pages XXX-XXX. 2009.
(accepted for publication)
10. **A Comparison of Tabular PDF Inversion Methods.**
David Cline, Anshuman Razdan, Peter Wonka.
Computer Graphics Forum. volume 28. number 1. pages 154-160. 2009.
11. **GPU Rendering of Relief Mapped Concial Frusta**
Deepali Bhagvat, Stefan Jeschke, David Cline, Peter Wonka
Computer Graphics Forum, volume XX, number XX. Pages XXX-XXX. 2009.
(accepted for publication)
12. **Modeling the Appearance and Behavior of Urban Spaces**
Carlos Vanegas, Daniel Aliaga, Peter Wonka, Pascal Müller, Paul Waddell, Benjamin Watson
Computer Graphics Forum, volume XX, number XX. Pages XXX-XXX. 2009.
(accepted for publication)
13. **Curve Matching for Open 2D Curves**
Ming Cui, *John C Femiani*, Jiuxiang Hu, Peter Wonka, Anshuman Razdan
Pattern Recognition Letters. volume 30. number 1. pages 1-10. 2009.
14. **Generating 3D Building Models from Architectural Drawings: A Survey**
Xuetao Yin, Peter Wonka, Anshuman Razdan
IEEE Computer Graphics and Applications. volume 29. issue 1. pages 20-30. 2009

15. **Interactive Procedural Street Modeling**
Guoning Chen, Gregory Esch, Peter Wonka, Pascal Müller, Eugene Zhang
ACM Transactions on Graphics. volume 27. number 3. article# 103, pages 1-10. 2008.
(Proceedings of SIGGRAPH 2008)
16. **Interactive Visual Editing of Grammars for Procedural Architecture**
Markus Lipp, Peter Wonka, Michael Wimmer
ACM Transactions on Graphics. volume 27. number 3. article# 102, pages 1-10. 2008.
(Proceedings of SIGGRAPH 2008)
17. **Visibility-driven Mesh Analysis and Visualization through Graph Cuts**
Kaichi Zhou, Eugene Zhang, Jiri Bittner, Peter Wonka
IEEE Transactions on Visualization and Computer Graphics, 14(6), pages 1667-1674. 2008.
(Proceedings of Visualization 2008)
18. **Procedural Urban Modeling in Practice**
Benjamin Watson, Pascal Müller, Peter Wonka, Chris Sexton, Oleg Veryovka, Andy Fuller
IEEE Computer Graphics and Applications. 28(3), pages 18 – 26. 2008
19. **Image-Based Procedural Modeling of Building Facades.**
Pascal Müller, Gang Zeng, Peter Wonka, Luc Van Gool.
ACM Transactions on Graphics. 26(3), pages 85:1-85:9. 2007
(Proceedings of SIGGRAPH 2007)
20. **Road Network Extraction and Intersection Detection from Aerial Images by Tracking Road Footprints .**
Jiuxiang Hu, Anshuman Razdan, *John Femiani*, *Ming Cui*, Peter Wonka.
IEEE Transactions on Geoscience and Remote Sensing, 45(12), pages 4144-4157. 2007.
21. **A New Image Registration Scheme Based on Curvature Scale Space Curve Matching.**
Ming Cui, Peter Wonka, Jiuxiang Hu, Anshuman Razdan.
Visual Computer, 23(8), pages 607-618. 2007.
22. **Guided Visibility Sampling.**
Peter Wonka, Michael Wimmer, *Kaichi Zhou*, Stefan Maierhofer, Gerd Hesina, Alexander Reshetov.
ACM Transactions on Graphics, 25(3), pages 494-502. 2006.
(Proceedings of SIGGRAPH 2006)
23. **Procedural Modeling of Buildings.**
Pascal Mueller, Peter Wonka, Simon Haegler, Andreas Ulmer, Luc Van Gool.
ACM Transactions on Graphics. 25(3), pages 614-623. 2006.
(Proceedings of SIGGRAPH 2006)
24. **Punctuated Simplification.**
Justin Jang, Peter Wonka, Bill Ribarsky, Chris Shaw.
The Visual Computer. Volume 22. number 2. pages 136-145. 2006.
25. **Instant Architecture.**
Peter Wonka, Michael Wimmer, François Sillion, and William Ribarsky.
ACM Transactions on Graphics, volume 22, number 3, pages 669-677. 2003.
(Proceedings of SIGGRAPH 2003)
26. **Visibility in Computer Graphics.**
Jiri Bittner and Peter Wonka.
Journal of Environment and Planning B: Planning and Design, volume 30, number 5, pages 729-755. 2003.
27. **Instant Visibility.**
Peter Wonka, Michael Wimmer, and François Sillion.
Computer Graphics Forum, volume 20, number 3. September 2001.
(Proceedings of Eurographics 2001)
(Günther Enderle Award for the best paper at Eurographics 2001).
28. **Occluder Shadows for Fast Walkthroughs of Urban Environments.**
Peter Wonka and Dieter Schmalstieg.
Computer Graphics Forum, volume 18, number 3, pages 51-60, 1999.
(Proceedings of Eurographics 1999)

Refereed Conference Proceedings

Notes: All papers are reviewed based on the complete paper.

1. **Tensor completion for estimating missing values in visual data.**
Ji Liu, Przemyslaw Musialski, Peter Wonka, and Jieping Ye.
accepted at ICCV. 2009.
2. **Parallel Generation of L-Systems**
Markus Lipp, Peter Wonka, Michael Wimmer
Vision, Modeling, and Visualization Workshop. 2009.
3. **Symmetry-Based Facade Repair**
Przemyslaw Musialski, Peter Wonka, Meinrad Recheis, Stefan Maierhofer, Werner Purgathofer
Vision, Modeling, and Visualization Workshop. 2009.
4. **Tiamat: A Three-Dimensional Editing Tool for Complex DNA Structures.**
Sean Williams, Kyle Lund, Chenxiang Lin, Peter Wonka, Stuart Lindsay, Hao Yan.
DNA Computing. 2008.
5. **Optimized Subdivisions for Preprocessed Visibility.**
Oliver Mattausch, Jiří Bittner, Peter Wonka, Michael Wimmer.
In Proceedings of Graphics Interface 2007, pages - 335-342. May 2007.
6. **Fourier Shape Descriptors of Pixel Footprints For Road Extraction From Satellite Images.**
J. Hu, J. Femiani, A. Razdan, Ming Cui, P. Wonka.
IEEE International Conference on Image Processing 2007 (ICIP), pages I - 49 - I - 52. 2007.
7. **Procedural 3D Reconstruction of Puuc Buildings in Xkipché.**
Pascal Müller, T. Vereenooghe, Peter Wonka, I. Paap and Luc Van Gool.
Eurographics Symposium on Virtual Reality, Archaeology and Cultural Heritage (VAST), pages 139-146. 2006.
(**Won best papers award. (2nd)**)
8. **Point Sampling with Uniformly Distributed Lines.**
J. Rovira, P. Wonka, F. Castro, M. Sbert.
Eurographics Symposium on Point-Based Graphics 2005. June 2005.
9. **Fast Exact From-Region Visibility in Urban Scenes.**
J. Bittner, P. Wonka and M. Wimmer.
Eurographics Symposium on Rendering 2005. June 2005.
10. **Appearance-Preserving View-Dependent Visualization.**
Justin Jang, William Ribarsky, Chris Shaw, and Peter Wonka.
IEEE Visualization 2003. pages 473 - 480. 2003.
11. **Rendering Time Estimation for Real-Time Rendering.**
Michael Wimmer and Peter Wonka.
Proceedings of Eurographics Symposium on Rendering 2003, pages 118-129. June 2003.
12. **Visibility Preprocessing for Urban Scenes using Line Space Subdivision.**
Jiri Bittner, Peter Wonka, and Michael Wimmer.
In Proceedings of Pacific Graphics (PG'01), pages 276-284, Tokyo, Japan, October 2001.
13. **Point-Based Impostors for Real-Time Visualization.**
Michael Wimmer, Peter Wonka, and François Sillion.
Proceedings of the Eurographics Workshop on Rendering 2001. pages 163-176. 2001.
14. **Visibility Preprocessing with Occluder Fusion for Urban Walkthroughs.**
Peter Wonka, Michael Wimmer, and Dieter Schmalstieg.
Proceedings of the Eurographics Workshop on Rendering 2000. pages 71-82. 2000.
15. **Raytracing of Nonlinear Fractals.**
Peter Wonka, Michael Gervautz.
WSCG Plzen 1998 Proceedings, pages 424-431, February 1998

Other Publications

- Procedural Methods for Urban Modeling.
Benjamin Watson, Peter Wonka
IEEE Computer Graphics and Applications, 28(3): 16-17. 2008.
(Introduction to a special issue of CG & A)
- Transformations in Design.
Pascal Mueller, Peter Wonka, Simon Haegler, Luc Van Gool.
Siggraph Animation Festival. Animated Movie. 2005.
- Modellierung und Rendering mit nichtlinearen CSG-pL-systemen
Peter Wonka. (Diploma Thesis)
Institute of Computer Graphics, Vienna University of Technology. 1997.
- Occlusion Culling for Real-Time Rendering of Urban Environments
Peter Wonka. (PhD Thesis)
Institute of Computer Graphics, Vienna University of Technology. 2001.
- Digitale Bausteine zur Fassadenmodellierung
Peter Wonka (Diploma Thesis).
Institute of Local Planning, Vienna University of Technology. 2002.