

# [Andrew Nealen.]

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RESEARCH INTERESTS            Computer graphics, geometric modeling, interaction techniques, digital games, physically-based modeling, texture synthesis, computer animation

CURRENT POSITION            Assistant Professor of Computer Science at Rutgers University

EDUCATION            ♦ **Technische Universität Berlin**, Germany.  
Ph.D. in Computer Science (Summa Cum Laude), 2003 – September 2007.  
Thesis title: *Algorithms and Interfaces for the Creation, Modification and Optimization of Surface Meshes*.

♦ **Technische Universität Darmstadt**, Germany.  
M.Sc. (Dipl.-Inform.) in Computer Science, 1999 – May 2003.  
Thesis title: *Hybrid Texture Synthesis*.

♦ **University of British Columbia**, Canada.  
Fall 2001 – Spring 2002. Graduate Computer Science studies.

♦ **Technische Universität Darmstadt**, Germany.  
M.Sc. (Dipl.-Ing.) in Structural Engineering and Architecture, 1989 – August 1996. Thesis title: *Energy Conserving Construction Design in North America and Europe*.

AWARDS, GRANTS AND SCHOLARSHIPS            ♦ NSF grant for research on *Human Centric Computing: Dynamic Skeletal Part Hierarchies for Sketching 3D Shapes and Their Animations* (2009–2012)

♦ Awarded *best of show* and *most fun/compelling* at IndieCade for video game *Osmos* (2009)

♦ D2D vision award at the Independent Games Festival (IGF) for video game *Osmos* (2009)

♦ INI-GraphicsNet best paper award (2006)

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- ◇ JSPS scholarship for research at The University of Tokyo, Japan (2005)
- ◇ INI-GraphicsNet best thesis award (2003)
- ◇ DAAD graduate scholarship for the University of British Columbia (2001 - 2002)
- ◇ Highest ranked graduate student in Civil Engineering (1997)

PUBLICATIONS    **Journal papers**

- ◇ Johannes Zimmermann, Andrew Nealen and Marc Alexa. Sketching Contours. *Computers & Graphics*, 32(3):486–499, 2008.
- ◇ Andrew Nealen, Takeo Igarashi, Olga Sorkine and Marc Alexa. FiberMesh: Designing Freeform Surfaces with 3D Curves. *ACM Transactions on Graphics (Proceedings of ACM SIGGRAPH)*, 26(3), article no. 41, 2007.
- ◇ Andrew Nealen, Olga Sorkine, Marc Alexa and Daniel Cohen-Or. A Sketch-Based Interface for Detail-Preserving Mesh Editing. *ACM Transactions on Graphics (Proceedings of ACM SIGGRAPH)*, 24(3):1142–1147, 2005.
- ◇ Andrew Nealen, Matthias Müller, Richard Keiser, Eddy Boxerman and Mark Carlson. Physically-Based Deformable Models in Computer Graphics. *Computer Graphics Forum*, 25(4):809 - 836, 2005.

**Refereed proceedings**

- ◇ Andrew Nealen, Justus Pett, Marc Alexa and Takeo Igarashi. GridMesh: fast and high quality 2D Mesh generation for interactive 3D shape modeling. In *IEEE International Conference on Shape Modeling and Applications, 2009 (SMI 2009)*., 155–162, 2009.
- ◇ Johannes Zimmermann, Andrew Nealen and Marc Alexa. SilSketch: Automated Sketch-Based Editing of Surface Meshes. In *Eurographics Workshop on Sketch-Based Interfaces and Modeling*, 23–30, 2007.
- ◇ Andrew Nealen, Takeo Igarashi, Olga Sorkine and Marc Alexa. Laplacian Mesh Optimization. *ACM GRAPHITE*, 381–389, 2006.
- ◇ Anders Adamson, Marc Alexa and Andrew Nealen. Adaptive Sampling of Intersectable Models Exploiting Image and Object-space Coherence. In *ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games*, 171–178, 2005.
- ◇ Matthias Müller, Richard Keiser, Andrew Nealen, Mark Pauly, Markus Gross and Marc Alexa. Point Based Animation of Elastic, Plastic and Melting Objects. In *ACM SIGGRAPH / Eurographics Symposium on Computer Animation*, 141–151, 2004.

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- ◇ Andrew Nealen and Marc Alexa. Fast and High Quality Overlap Repair for Patch-Based Texture Synthesis. In *Computer Graphics International*, 582–585, 2004.
- ◇ Andrew Nealen and Marc Alexa. Hybrid Texture Synthesis. In *Eurographics Symposium on Rendering*, 97–105, 2003.

### Book Chapters

- ◇ Marc Alexa and Andrew Nealen. Mesh Editing Based on Discrete Laplace and Poisson Models. In *Advances in Computer Graphics and Computer Vision*, Springer Berlin Heidelberg, 2008.

### Technical reports

- ◇ Andrew Nealen and Olga Sorkine. A note on boundary constraints for linear variational surface design. Technical Report, TU Berlin, 2007.

### Material science

- ◇ Peter Grübl, Andrew Nealen and Norbert Schmidt. Concrete made from recycled aggregate: experiences from the building project Waldspirale. In *Darmstadt Concrete – Annual Journal 14*, TU Darmstadt, 1999.
- ◇ Peter Grübl and Andrew Nealen. Construction of an office building using concrete made from recycled demolition material. In *Symposium on sustainable construction*, University of Dundee, 1998.
- ◇ Andrew Nealen and Sven Schenk. The Influence of recycled aggregate core moisture on freshly mixed and hardened concrete properties. In *Darmstadt Concrete – Annual Journal 13*, TU Darmstadt, 1998.
- ◇ Christoph Lemmer, Markus Rühl and Andrew Nealen. Correction of consistency of concrete made with aggregates from concrete rubble. In *Darmstadt Concrete – Annual Journal 13*, TU Darmstadt, 1998.
- ◇ Andrew Nealen and Markus Rühl. Consistency aspects in the production of concrete using aggregates from recycled demolition material. In *Darmstadt Concrete – Annual Journal 12*, TU Darmstadt, 1997.

### WORK EXPERIENCE

- ◇ **Assistant Professor of Computer Science**  
Rutgers University (September 2008 – Today)
- ◇ **Postdoctoral Researcher and Lecturer**  
Technische Universität Berlin (October 2007 – August 2008)  
Teaching: game design and programming

- ◇ **Research Assistant, Teaching Assistant and PhD Student**  
Technische Universität Darmstadt and  
Technische Universität Berlin (June 2003 – September 2007)  
Teaching: introductory and advanced computer graphics, linear algebra
- ◇ **Software Developer**, Signal 7, Darmstadt, Germany (May 2002 - May 2003)  
Red Bull Web-based Content Management System ([www.redbull.de](http://www.redbull.de))  
Java J2EE/XML/XSL module development for a worldwide operating intranet system
- ◇ **Research and Teaching Assistant**  
Imager Computer Graphics Lab, UBC (September 2001 – April 2002)  
Research: port of existing graphics demo software to SGI OS  
Teaching: advanced software engineering, Java server programming
- ◇ **Software Developer**, Signal 7, Darmstadt, Germany (April 2000 - August 2001) Java module development for various content management systems
- ◇ **Research Assistant, Teaching Assistant and PhD Student**  
Technische Universität Darmstadt (July 1997 – December 1999)  
Teaching: material science, material mechanics, concrete construction  
Research: concrete construction, concrete recycling
- ◇ **Engineering/Architectural Consultant**  
Reuter Architects and Engineers, Idstein, Germany (July 1989 - June 1997)  
Worked in all key areas of construction planning, execution and management  
Design, construction and maintenance of bridges, urban housing, and industrial buildings.

STUDENTS  
CO-ADVISED

- ◇ **Kristian Bergmann**: User Interfaces Based on a Handheld Projection Screen. TU Berlin, M.Sc. Thesis (Dipl.-Inform.), March 2009 (Co-advisor: Prof. Marc Alexa, TU Berlin)
- ◇ **Justus Pett**: Sketching Meshes. TU Berlin, M.Sc. Thesis (Dipl.-Inform.), May 2008 (Co-advisor: Prof. Marc Alexa, TU Berlin)
- ◇ **Johannes Zimmermann**: Automated, Sketch Based Editing of Triangle Meshes. TU Berlin, M.Sc. Thesis (Dipl.-Inform.), July 2007 (Co-advisor: Prof. Marc Alexa, TU Berlin)
- ◇ **Christian Appelt**: Real-Time 3D Vehicle Simulation. TU Berlin, Undergraduate Thesis, August 2007 (Co-advisor: Prof. Marc Alexa, TU Berlin)
- ◇ **Julien Koenen**: Image Space Smoothies for Real-Time Shadow Rendering on the GPU. TU Darmstadt, Undergraduate Thesis, February 2006 (Co-advisor: Prof. Marc Alexa, TU Darmstadt)
- ◇ **Falk Schaub**: Real-Time Shadow Rendering using Image and Object Space Techniques. TU Darmstadt, M.Sc. Thesis (Dipl.-Inform.), October 2004 (Co-advisor: Prof. Marc Alexa, TU Darmstadt)

- ◇ **Paulo Goncalves:** Simulating Landslides on the GPU. TU Darmstadt, M.Sc. Thesis (Dipl.-Ing.), October 2004 (Co-advisors: Prof. Stefan Schäfer, TU Darmstadt; Prof. Marc Alexa, TU Darmstadt)
- ◇ **Sven Schenk:** The Influence of recycled aggregate core moisture on freshly mixed and hardened concrete properties. TU Darmstadt, M.Sc. Thesis (Dipl.-Ing.), October 1998 (Co-advisor: Prof. Peter Grübl)
- ◇ **Norbert Schmidt:** Concrete made from recycled aggregate: Experiences from the building project Waldspirale. TU Darmstadt, M.Sc. Thesis (Dipl.-Ing.), October 1999 (Co-advisor: Prof. Peter Grübl)

RESEARCH  
VISITS

- ◇ The University of Tokyo, research visit, Autumn 2005. Interactive mesh construction, editing and optimization (with Takeo Igarashi).
- ◇ Tel Aviv University, research visit, Autumn 2004. Sketch based modeling interfaces and interactive shape editing (with Olga Sorkine and Daniel Cohen-Or).
- ◇ ETH Zürich, research visit, January 2004. Point Based Animation of Elastic, Plastic and Melting Objects (with Matthias Müller, Richard Keiser, Mark Pauly and Markus Gross) <http://www.pointbasedanimation.org>.

PROFESSIONAL  
ACTIVITIES

**Program Committee member**

- ◇ ACM SIGGRAPH 2009 General + Late Breaking Jury
- ◇ ACM SIGGRAPH 2009 Games Papers
- ◇ ACM SIGGRAPH/Eurographics 2009 Symposium on Computer Animation
- ◇ Eurographics/ACM SIGGRAPH 2009 Symposium on Geometry Processing
- ◇ Independent Games Festival (IGF) 2009 Student Games Jury
- ◇ ACM SIGGRAPH 2008 General + Late Breaking Jury
- ◇ ACM SIGGRAPH ASIA 2008 Sketches & Posters
- ◇ Eurographics 2008 Short Papers
- ◇ ACM SIGGRAPH 2007 Sketches & Posters

**Talks at conferences and seminars**

- ◇ Contemporary Video Game Design Challenges: Visualization, Interaction and Simulation, *DIMACS Workshop on Algorithmic Mathematical Art*, June 2009
- ◇ Simple 3D Content Creation Tools, *IGDA NY*, October 2008
- ◇ In Search of the Human Video-Out, *Rutgers*, October 2008
- ◇ FiberMesh and SilSketch, *Rutgers, The State University of New Jersey*, April 2008

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- ◇ FiberMesh and SilSketch, *Princeton Graphics Group*, April 2008
- ◇ Interfaces and Algorithms for the Creation, Modification, and Optimization of Surface Meshes, *Polytechnical University of Catalonia, Barcelona*, February 2008
- ◇ FiberMesh and SilSketch, *Université de Montreal*, August 2007
- ◇ FiberMesh: Designing Freeform Surfaces with 3D Curves, *ACM SIGGRAPH Conference*, San Diego, August 2007
- ◇ Interfaces and Algorithms for the Creation, Modification, and Optimization of Surface Meshes, *REVES/Inria Sophia Antipolis*, June 2007
- ◇ Laplacian Mesh Optimization, *ACM GRAPHITE Conference*, Kuala Lumpur, November 2006
- ◇ Sketch-Based Mesh Deformation and Optimization, *Max Planck Insitut für Informatik*, Saarbrücken, August 2006
- ◇ Physically Based Deformable Models in Computer Graphics, *Ochanomizu University*, November 2005
- ◇ Physically Based Deformable Models in Computer Graphics, *The University of Tokyo*, October 2005
- ◇ Physically Based Deformable Models in Computer Graphics, *Eurographics Conference*, Dublin, August 2005
- ◇ A Sketch-Based Interface for Detail-Preserving Mesh Editing *ACM SIGGRAPH Conference*, Los Angeles, August 2005
- ◇ *Point Based Animation and Continuum Mechanics*, Tel Aviv University, October 2004
- ◇ Point Based Animation of Elastic, Plastic and Melting Objects, *Symposium on Computer Animation*, Grenoble, August 2004
- ◇ Fast and High Quality Overlap Repair for Patch-Based Texture Synthesis, *Computer Graphics International*, Crete, June 2004
- ◇ Hybrid Texture Synthesis, *Eurographics Symposium on Rendering*, Leuven, June 2003

### Reviewer service

- ◇ **Conferences:** ACM SIGGRAPH, Eurographics, Eurographics/ACM SIGGRAPH Symposium on Geometry Processing, Eurographics Symposium on Rendering, Eurographics/ACM SIGGRAPH Symposium on Computer Animation, Pacific Graphics, Shape Modeling International, ACM Solid and Physical Modeling Symposium, ACM Web3D
- ◇ **Journals:** IEEE Transactions on Visualization and Computer Graphics, IEEE Transactions on Image Processing, IEEE Computer Graphics and Applications, Computer Graphics Forum, Computers & Graphics
- ◇ **Organizations:** International Game Developers Association (IGDA) Education SIG, Independent Games Festival (IGF)