Computer Science and Engineering NYU Tandon School of Engineering 2 MetroTech Center, 10th Floor Brooklyn, NY 11201 nealen@nyu.edu

http://engineering.nyu.edu/people/andy-nealen

Prof. Dr.-Ing. Andrew Nealen 343 Gold Street, Apt 4004 Brooklyn, NY 11201 andy@nealen.net http://www.nealen.net

RESEARCH INTERESTS

Computational modeling in games, game programming and design, computer aided game design, computer graphics, interactive techniques, geometric modeling, human perception, computer animation, physically-based modeling, artificial intelligence and evolutionary computation, game technology

CURRENT POSITION(S)

Assistant Professor of Computer Science at NYU Co-director of the NYU Game Innovation Lab

EDUCATION

♦ Technische Universität Berlin, Germany.

Ph.D. (Dr.-Ing.) in Computer Science (Summa Cum Laude), 2003 – September 2007. Thesis title: Algorithms and Interfaces for the Creation, Modification and Optimization of Surface Meshes.

- ♦ University of British Columbia, Canada.
 Fall 2001 Spring 2002. Graduate Computer Science studies.
- Technische Universität Darmstadt, Germany.
 M.Sc. (Dipl.-Inform.) in Computer Science, 1999 May 2003.
 Thesis title: Hybrid Texture Synthesis.
- ♦ Technische Universität Darmstadt, Germany.
 Spring 1997 Summer 1999. Graduate studies in Material Science.
- Technische Universität Darmstadt, Germany.
 M.Sc. (Dipl.-Ing.) in Civil Engineering (Structural Engineering and Architecture), 1989 1996. Thesis title: Energy Conserving Construction Design.

Grants

- NSF grant for research on General Intelligence through Algorithm Invention and Selection (\$427,000, co-PI with PI Julian Togelius (50/50 split of funds), start: september 2017, finish: august 2020)
- Honda Research Institute (HRI) sponsored grant for research on Cooperative Design Innovation Games (\$270,792, solo PI, start: march 2017, finish: february 2020)
- ♦ SoftBank Group Corp. sponsored grant for research on extracting 3D Modeled, Rigged, and Animated Characters from 2D Video (\$664,020, solo PI, start: september 2016, finish: august 2019)

- ♦ Winston Foundation grant for the development of Game Design for Citizen Science (\$75,000, co-PI with Frank Lantz, start: jan 2015, finish: dec 2015)
- ♦ Goddard Junior Faculty Fellowship (\$4,000, start: july 2014, finish: july 2015)
- NSF grant for research on Thermodynamic Cycles and Relaxation Timescales in Surface Hybridization (\$53,934 total funds for my lab, co-PI with PI Rastislav Levicky, start: may 2013, finish: may 2014)
- ⋄ NSF grant for research on Dynamic Skeletal Part Hierarchies for Sketching 3D Shapes and Their Animations (\$499,272 total (\$363,110 at Rutgers + \$136,162 at NYU), solo PI, start: september 2009, finish: august 2014)

AWARDS AND SCHOLARSHIPS

- ♦ Best Paper Award for the paper Exploring Game Space Using Survival Analysis at Foundations of Digital Games (June 2015)
- ♦ Apple Design Award 2011 for Osmos (June 2011)
- \diamond Awarded *iPad Game of the Year* for *Osmos* by Apple Computer Inc. (December 2010)
- ♦ Awarded best of show and most fun/compelling at IndieCade for videogame Osmos (October 2009)
- ♦ D2D vision award at the Independent Games Festival (IGF) for videogame Osmos (March 2009)
- ♦ INI-GraphicsNet best paper award (2006)
- ♦ 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, TU Darmstadt (1997)

PUBLICATIONS (NAMES OF MY GRADUATE STUDENTS UNDERLINED)

Google Scholar Page

https://scholar.google.com/citations?user=YjpanIYAAAAJ

Journal papers (11)

- [J11] <u>Aaron Isaksen</u>, Christoffer Holmgård, Julian Togelius, and Andy Nealen. Characterising Score Distributions in Dice Games. *Game and Puzzle Design*. vol. 2, no. 1, 2016, pp. 24-37. http://game.engineering.nyu.edu/characterizing-dice-games/
- [J10] <u>Aaron Isaksen</u>, Mehmet Ismail, Steven J. Brams, and Andy Nealen. Catch-up: A Game In Which the Lead Alternates. *Game and Puzzle Design*. vol. 1, no. 2, 2015, pp 38-49. http://game.engineering.nyu.edu/projects/catch-up/
- [J9] Ming Jin, Dan Gopstein, Yotam I. Gingold and Andrew Nealen. Ani-Mesh: Interleaved Animation, Modeling and Editing. *ACM Transactions on Graphics (SIGGRAPH Asia)*. Vol. 34, Issue 6, 2015, pp. 207:1-207:8. http://game.engineering.nyu.edu/projects/animesh/

- [J8] <u>Timothy Gerstner</u>, Adam Finkelstein, Marc Alexa, Doug DeCarlo, Yotam I. Gingold and Andrew Nealen. Pixelated Image Abstraction with Integrated User Constraints. *Computers & Graphics*. Vol. 37, Issue 5, 2013, pp. 333–347.
- [J7] <u>Péter Borosán</u>, <u>Ming Jin</u>, Doug DeCarlo, Yotam I. Gingold and Andrew Nealen. RigMesh: Automatic Rigging for Part-Based Shape Modeling and Deformation. *ACM Transactions on Graphics (SIGGRAPH Asia)*, Vol. 31, Issue 6, 2012, pp. 198:1–198:9. http://game.engineering.nyu.edu/rigmesh/
- [J6] <u>Adrian Secord</u>, Jingwan Lu, Adam Finkelstein, Manish Singh and Andrew Nealen. Perceptual Models of Viewpoint Preference. *ACM Transactions on Graphics*, Vol. 30, Issue 5, 2011, pp. 109:1–109:12.
- [J5] Kenshi Takayama, Olga Sorkine, Andrew Nealen and Takeo Igarashi. Volumetric Modeling with Diffusion Surfaces. *ACM Transactions on Graphics* (SIGGRAPH Asia), Vol. 29, Issue 6, 2010, pp. 180:1–180:8. https://www.youtube.com/watch?v=gFQKMCF2jqs
- [J4] <u>Johannes Zimmermann</u>, Andrew Nealen and Marc Alexa. Sketching Contours. *Computers & Graphics*, 32(5):486–499, 2008.
- [J3] Andrew Nealen, Takeo Igarashi, Olga Sorkine and Marc Alexa. Fiber-Mesh: Designing Freeform Surfaces with 3D Curves. *ACM Transactions on Graphics (Proceedings of ACM SIGGRAPH)*, 26(3), article no. 41, 2007. https://www.youtube.com/watch?v=WOXGkS7zebo
- [J2] 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. https://www.youtube.com/watch?v=EMx6yNe23ug
- [J1] 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, 2006.

Refereed proceedings (27)

- [C27] <u>Fernando de Mesentier Silva</u>, <u>Scott Lee</u>, Julian Togelius, and Andy Nealen. AI-based Playtesting of Contemporary Board Games. To appear in Proceedings of Foundations of Digital Games (FDG), 2017.
- [C26] <u>Tiago Machado</u>, Andy Nealen, and Julian Togelius. SeekWhence: A Retrospective Analysis Tool for General Game Design. To appear in Proceedings of Foundations of Digital Games (FDG, Short Papers), 2017.
- [C25] <u>Aaron Isaksen</u>, Drew Wallace, Adam Finkelstein, and Andy Nealen. Simulating Strategy and Dexterity for Puzzle Games. To Appear in Proceedings of the IEEE Conference on Computational Intelligence and Games (CIG). IEEE (2017).
- [C24] Frank Lantz, <u>Aaron Isaksen</u>, Alexander Jaffe, Andy Nealen, and Julian Togelius. Depth in Strategic Games. Proceedings of the AAAI *What's Next for AI in Games?* Workshop, 2017, pp. 967–974.

- [C23] Fernando de Mesentier Silva, Scott Lee, Julian Togelius, and Andy Nealen. AI as Evaluator: Search Driven Playtesting of Modern Board Games. Proceedings of the AAAI What's Next for AI in Games? Workshop, 2017, pp. 959–966.
- [C22] <u>Andre Mendes</u>, Andy Nealen, and Julian Togelius. Hyper-Heuristic General Video Game Playing. Proceedings of IEEE Computational Intelligence and Games (CIG) 2016.
- [C21] <u>Fernando de Mesentier Silva, Aaron Isaksen</u>, Julian Togelius, and Andy Nealen. Generating Heuristics for Novice Players. Proceedings of Computational Intelligence and Games (CIG). IEEE (2016).
- [C20] Matt Stanton, Sascha Geddert, Adrian Blumer, Paul Hormis, Andy Nealen, Seth Cooper, and Adrien Treuille. Large-scale finite state game engines. Proceedings of the Eurographics/ACM SIGGRAPH Symposium on Computer Animation 2016, pp. 221–229.
- [C19] <u>Aaron Isaksen</u> and Andy Nealen. A Statistical Analysis of Player Improvement and Single-Player High Scores. Proceedings of DiGRA/FDG 2016.
- [C18] <u>Tiago Machado</u>, Ivan Bravi, <u>Zhu Wang</u>, Andy Nealen, and Julian Togelius. Shopping for Game Mechanics. Proceedings of the 2016 FDG Workshop on Procedural Content Generation.
- [C17] <u>Ahmed Khalifa, Aaron Isaksen, Julian Togelius and Andy Nealen.</u> Modifying MCTS for Human-like General Video Game Playing. Proceedings of IJCAI, 2016, pp. 2514–2520.
- [C16] <u>Aaron Isaksen</u>, Julian Togelius, Frank Lantz, and Andy Nealen. Playing Games Across the Superintelligence Divide. Thirtieth AAAI Conference on Artificial Intelligence (AAAI-16) Workshop on AI, Ethics, and Society, 2016, pp. 89–97.
- [C15] <u>Aaron Isaksen</u> and Andy Nealen. Comparing Player Skill, Game Variants, and Learning Rates with Survival Analysis. In *Player Modeling Workshop at the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment* (AIIDE), November 2015, pp. 15–21.
- [C14] <u>Aaron Isaksen</u>, <u>Dan Gopstein</u>, Julian Togelius, and Andy Nealen. Discovering Unique Game Variants. In proceedings of *Computational Creativity and Games Workshop*, Sixth International Conference on Computational Creativity (ICCC) 2015, July 2015.
- [C13] <u>Aaron Isaksen</u>, <u>Dan Gopstein</u>, and Andy Nealen. Exploring Game Space Using Survival Analysis. In proceedings of *Foundations of Digital Games* (FDG) 2015, June 2015. **Best Paper Award http://www.fdg201high5.org/program.html#bpa**. Demo http://game.engineering.nyu.edu/projects/exploring-game-space/
- [C12] Andy Nealen. Ascension: a Case Study in Deckbuilding Games. *Digital Games Research Association* (DiGRA) 2013, August 2013.

- [C11] <u>Timothy Gerstner</u>, Adam Finkelstein, Marc Alexa, Doug DeCarlo, Yotam I. Gingold and Andrew Nealen. Pixelated Image Abstraction. In proceedings of *International Symposium on Non-Photorealistic Animation and Rendering* (NPAR), June 2012, pp. 29–36.
- [C10] Andrew Nealen, Adam Saltsman and Eddy Boxerman. Towards Minimalist Game Design. In proceedings of Foundations of Digital Games (FDG), 2011, pp. 38–45.
- [C9] <u>Péter Borosán, Reid Howard</u>, Shaoting Zhang and Andrew Nealen. Hybrid Mesh Editing. In proceedings of *Eurographics (Short Papers)*, 2010, pp. 41–44.
- [C8] Shaoting Zhang, Andrew Nealen and Dimitris Metaxas. Skeleton Based As-Rigid-As-Possible Volume Modeling. In proceedings of *Eurographics (Short Papers)*, 2010, pp. 21–24.
- [C7] Andrew Nealen, <u>Justus Pett</u>, 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.
- [C6] <u>Johannes Zimmermann</u>, Andrew Nealen and Marc Alexa. SilSketch: Automated Sketch-Based Editing of Surface Meshes. In *4th Eurographics Workshop on Sketch-Based Interfaces and Modeling*, 23–30, 2007.
- [C5] Andrew Nealen, Takeo Igarashi, Olga Sorkine and Marc Alexa. Laplacian Mesh Optimization. ACM GRAPHITE, 381–389, 2006.
- $[{\bf C4}]$ Anders Adamson, Marc Alexa and Andrew Nealen. Adaptive Sampling of Intersectable Models Exploiting Image and Object-space Coherence. ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games, 2005, pp. 171–178.
- [C3] 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.
- [C2] Andrew Nealen and Marc Alexa. Fast and High Quality Overlap Repair for Patch-Based Texture Synthesis. In *Computer Graphics International*, 2004, pp. 582–585.
- [C1] Andrew Nealen and Marc Alexa. Hybrid Texture Synthesis. In Euro-graphics Symposium on Rendering, 97–105, 2003.

Online Research (arXiv.org) Articles (2)

[I2] Adam Summerville, Sam Snodgrass, Matthew Guzdial, Christoffer Holmgrd, Amy K. Hoover, <u>Aaron Isaksen</u>, Andy Nealen, and Julian Togelius. Procedural Content Generation via Machine Learning (PCGML). February 2017. https://arxiv.org/abs/1702.00539.

[I1] Michael Cook, Mirjam Eladhari, Andy Nealen, Mike Treanor, Eddy Boxerman, Alex Jaffe, Paul Sottosanti, and Steve Swink. PCG-Based Game Design Patterns. October 2016. https://arxiv.org/abs/1610.03138.

Book Chapters (2)

- [B2] Andrew Nealen and Marc Alexa. The Creation and Modification of 3D Models Using Sketches and Curves. In *Sketch-Based Interfaces and Modeling*, Springer Berlin Heidelberg, DOI 10.1007/978-1-84882-812-4 (2011).
- [B1] 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, DOI 10.1007/978-3-540-75274-5 (2008).

Games (4)

- [G4] Eddy Boxerman, Dave Burke, Kun Zhang, and Andy Nealen. Osmos Multiplayer. Published on *iOS*, (2012). https://itunes.apple.com/us/app/osmos/id382991304
- [G3] Andy Nealen and Rupert Helbig. Grow21. Published under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License. tabletop, (2011). http://www.nealen.net/projects/grow21_rules.pdf
- [G2] Eddy Boxerman, Dave Burke, Aaron Barsky, Kun Zhang, and Andy Nealen. Osmos Mobile. Published on *iOS*, (2010). https://itunes.apple.com/us/app/osmos/id382991304
- [G1] Eddy Boxerman, Dave Burke, Kun Zhang, and Andy Nealen. Osmos. Published on Steam PC/Mac OS/Linux, (2009/2010). http://store.steampowered.com/app/29180/

Technical reports (2)

- [T2] Andrew Nealen and Olga Sorkine. A note on boundary constraints for linear variational surface design. Technical Report, TU Berlin, 2007.
- [T1] Andrew Nealen. An as-short-as-possible introduction to the least squares, weighted least squares and moving least squares methods for scattered data approximation and interpolation. Technical Report, TU Darmstadt, 2004.

Online Articles (2)

- [O2] Andrew Nealen. My Tabletop Games of 2014. Medium, 2014. https://medium.com/board-games/my-tabletop-games-of-2014-e4f8d903ffab
- [O1] Andrew Nealen. The 10 Best Board Games of 2013. Paste, 2013. http://www.pastemagazine.com/blogs/lists/2013/12/the-10-best-boardgames-of-2013.html

Material science (5)

[M5] 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.

[M4] 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.

[M3] 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.

[M2] 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.

[M1] 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

NYU Tandon School of Engineering (September 2012 – Today)

⋄ Core Team Member

Hemisphere Games (September 2007 – Today)

♦ Assistant Professor of Computer Science

Rutgers University (September 2008 – July 2012)

♦ Game Designer/Programmer

Area/Code (September 2010 - May 2011)

♦ 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)
 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 September 1999)
 Teaching: material science, material mechanics, concrete construction
 Research: material science, 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.

GRADUATE
AND
UNDERGRADUATE
CLASSES
TAUGHT

- ♦ CS-GY 6553 / CS-UY 4553 Game Design, Spring 2017, Enrollment: 28, Cross-listed Class, NYU
- ♦ CS-GY 6553 / CS-UY 4553 Game Design, Spring 2016, Enrollment: 23, Cross-listed Class, NYU
- ♦ CS-GY 6533 / CS-UY 4533 Interactive Computer Graphics, Spring 2016, Enrollment: 37, Cross-listed Class, NYU
- ♦ CS-GY 9223 Game Design Research, Fall 2015, Enrollment: 9, Graduate Seminar, NYU
- ♦ CS-GY 9223 Game Design for Citizen Science, Spring 2015, Enrollment: 12, Graduate Class, NYU
- ♦ CS-GY 6553 / CS-UY 4553 Game Design, Spring 2015, Enrollment: 16, Cross-listed Class, NYU
- ♦ CS-GY 6533 / CS-UY 4533 Interactive Computer Graphics, Fall 2014, Enrollment: 25, Cross-listed Class, NYU
- ♦ CS 9223 Minimalist Game Design, Spring 2014, Enrollment: 10, Crosslisted Class, NYU
- ♦ CS 6533 Interactive Computer Graphics, Fall 2013, Enrollment: 15, Cross-listed Class, NYU Poly
- ♦ CS 9223 Minimalist Game Design, Spring 2013, Enrollment: 13, Cross-listed Class, NYU Poly
- ♦ CS 6533 Interactive Computer Graphics, Fall 2012, Enrollment: 32, Cross-listed Class, NYU Poly
- ♦ CS 672 Video Game Design and Programming, Spring 2012, Enrollment: 16, Cross-listed Class, Rutgers
- ♦ CS 523 Computer Graphics: Shape Modeling, Spring 2011, Enrollment: 16, Graduate Class, Rutgers
- ♦ CS 428 Introduction to Computer Graphics, Fall 2010, Enrollment: 30, Cross-listed Class, Rutgers

- CS 672 Video Game Programming and Design, Spring 2010, Enrollment: 16, Cross-listed Class, Rutgers
- ♦ CS 428 Introduction to Computer Graphics, Fall 2009, Enrollment: 30, Cross-listed Class, Rutgers
- ♦ CS 500 Computer Science Seminar: Computer Graphics: Modeling, Animation and Games, Fall 2009, Enrollment: 8, Graduate Seminar, Rutgers
- ♦ CS 195 Honors Seminar in Computer Science: Video Game Design, Spring 2009, Enrollment: 12, Undergraduate Seminar, Rutgers
- ♦ CS 523 Computer Graphics: Shape Modeling, Spring 2009, Enrollment: 18, Graduate Class, Rutgers
- ♦ 0433 L 370 Game Programming, Summer 2008, Enrollment: 16, Undergraduate Class, TU Berlin
- ♦ 0433 L 370 Game Programming, Winter 2007/08, Enrollment: 16, Undergraduate Class, TU Berlin
- ♦ 0433 L 370 Game Programming, Summer 2007, Enrollment: 16, Undergraduate Class, TU Berlin
- ♦ Rodrigo Canaan: Computational Co-creativity in Games. NYU, PhD Thesis, Expected Graduation: fall 2021
- Crystal Butler: Expressive 3D Human Avatars for Rehabilitation. NYU,
 PhD Thesis, Expected Graduation: fall 2021
- ♦ Zhu Wang: Extracting Rigged + Animated Shapes from Video. NYU, PhD Thesis, Expected Graduation: fall 2020 (Co-advisor: Prof. Ken Perlin, NYU)
- Ahmed Khalifa: Human-like General Video Game Playing. NYU, PhD Thesis, Expected Graduation: fall 2019 (Co-advisor: Prof. Julian Togelius, NYU)
- Andre Mendes: Hyper-Heuristic General Video Game Playing. NYU, PhD Thesis, Expected Graduation: fall 2019 (Co-advisor: Prof. Julian Togelius, NYU)
- Tiago Machado: Interfaces for Sketching Games and Mechanics. NYU, PhD Thesis, Expected Graduation: fall 2019 (Co-advisor: Prof. Julian Togelius, NYU)
- ♦ Dan Gopstein: Human Perception of Code Complexity. NYU, PhD Thesis, Expected Graduation: fall 2019 (Co-advisor: Prof. Justin Cappos, NYU)
- Fernando Silva: Computational Design of Human-Readable Heuristics for Games. NYU, PhD Thesis, Expected Graduation: fall 2018
- Ming Jin: User Interfaces for Rigged Character Animation. NYU, PhD Thesis, Expected Graduation: fall 2017
- Aaron Isaksen (graduated): Computational Modeling for Computer Aided Game Design. NYU, PhD Thesis, April 2017. Winner of the Pearl Brownstein Doctoral Research Award.

PhD Students Advised

- Peter Borosan (graduated): Automatic Meshing and Rigging for the Creation and Deformation of 3D Shapes. Rutgers University, PhD Thesis, 2013 (now at Google)
- Adrian Secord (graduated): Creating collections and evaluating viewpoints:
 Selection techniques for interface design. New York University, PhD Thesis,
 September 2010 (Co-advisor: Prof. Denis Zorin, NYU) (now at Google)

Postdoctoral Fellows

- ♦ Christoph Salge: Empowerment in Artificial Intelligence. 2016–Today.
- Christoffer Holmgard: Human-Like Computational Playing and Playtesting using MCTS. 2016-2017 (Assistant Professor at Northeastern University starting fall 2017)
- ♦ Bert Buchholz: Virtual Camera Control and Teaching with Games. 2013-2014 (now Postdoctoral fellow at TU Delft)
- ♦ Yotam Gingold: Interfaces and Algorithms for Meshing and Modeling Shapes. 2011-2012 (now Assistant Professor at GMU)

MSC STUDENTS ADVISED

- ♦ Scott Lee: AI for tabletop and video game design, M.Sc. Thesis, Expected Graduation: fall 2017 (Co-advisor: Prof. Julian Togelius, NYU)
- ♦ Daniel Zhang: Inducing Cooperation Through Virtual Reality. NYU, M.Sc. Thesis, May 2017
- ♦ Timothy Gerstner: Pixelated Image Abstraction. Rutgers University, M.Sc. Thesis, March 2013 (now at Google)
- ♦ Reid Howard: Hybrid Mesh Editing. Rutgers University, M.Sc. Thesis, March 2011
- Kristian Bergmann: User Interfaces Based on a Handheld Projection Screen.
 TU Berlin, M.Sc. Thesis (Dipl.-Inform.), March 2009 (Co-advisor: Prof. March 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)
- Falk Schaub: Real-Time Shadow Rendering using Image and Object Space Techniques. TU Darmstadt, M.Sc. Thesis (Dipl.-Inform.), October 2004 (Coadvisor: 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)

STUDENTS

UNDERGRADUATE \diamond Christian Appelt: Real-Time 3D Vehicle Simulation. TU Berlin, Undergraduate Thesis, August 2007 (Co-advisor: Prof. Marc Alexa, TU Berlin)

Advised

♦ 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)

Thesis Commit-TEES

- ♦ Xiaofeng Mi: Robust, Representation and Depiction of 2D Shapes using Parts, Ph.D. Thesis, Rutgers University, 2010, Advisor: Doug DeCarlo
- ♦ **David Harmon**: Robust, Efficient, and Accurate Contact Algorithms, Ph.D. Thesis, Columbia University, 2010, Advisor: Eitan Grinspun
- ♦ Yotam Gingold: 2D-Centric Interfaces and Algorithms for 3D Modeling, Ph.D. Thesis, New York University, 2009, Advisor: Denis Zorin

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 and interactive shape editing interfaces (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).

Professional ACTIVITIES

Editorial (3)

- ♦ Society for the Advancement of the Science of Digital Games (SASDG), organizers of the Foundations of Digital Games (FDG) conference, Board Member (since March 2017)
- ♦ Practice: The Journal of Game Design, NYU Press, Editor-in-Chief (EIC), (work-in-progress)
- ♦ The Journal of Puzzle & Game Design, http://www.cameronius.com/gapd/, Editorial Panel

Conference Program Co-Chair (6)

- ♦ IEEE Computational Intelligence in Games 2017, General co-chair
- ♦ BIRS Workshop on Computational Modeling in Games 2016, Co-organizer
- ♦ Foundations of Digital Games 2015, Game Technology Track Chair
- ♦ Foundations of Digital Games 2012, Game Design Track Chair
- ♦ IndieCade Conference 2011, Culver City, Los Angeles
- ♦ 2011 Symposium on Sketch Based Interfaces and Modeling, Vancouver, Canada

International Program Committee member (32)

- ♦ SIGGRAPH Asia 2017 Technical Briefs and Posters
- ♦ Eurographics Symposium on Geometry Processing 2017
- ♦ ACM SIGGRAPH/Eurographics Symposium on Computer Animation 2017
- ♦ SIGGRAPH 2016 Technical Papers
- ♦ Eurographics 2016 Papers
- ♦ ACM SIGGRAPH/Eurographics Symposium on Computer Animation 2015
- ♦ SIGGRAPH Asia 2014 Technical Briefs and Posters
- ♦ SIGGRAPH 2014 Technical Papers
- ♦ Motion in Games 2014
- ♦ SIGGRAPH Asia 2013 Technical Briefs and Posters
- ♦ SIGGRAPH 2013 Technical Papers
- ♦ Motion in Games 2013
- ♦ Independent Games Festival 2013 Technical Excellence and Grand Prize Juries
- ♦ Eurographics 2013 Papers
- ♦ Independent Games Festival 2012 Technical Excellence and Grand Prize Juries
- ♦ Eurographics Symposium on Geometry Processing 2012
- ♦ Shape Modeling International 2012
- ♦ Motion in Games 2012
- ♦ Eurographics/ACM SIGGRAPH Symposium on Geometry Processing 2011
- ♦ Pacific Graphics 2011
- ♦ Independent Games Festival 2011 Technical Excellence and Grand Prize Juries
- ♦ Eurographics/ACM SIGGRAPH Symposium on Geometry Processing 2010
- ♦ Symposium on Sketch Based Interfaces and Modeling 2010
- ♦ ACM SIGGRAPH 2009 General + Late Breaking Jury
- ♦ ACM SIGGRAPH 2009 Games Papers
- ♦ ACM SIGGRAPH/Eurographics Symposium on Computer Animation 2009
- ♦ Eurographics/ACM SIGGRAPH Symposium on Geometry Processing 2009
- ♦ Independent Games Festival Student Games Jury 2009
- ♦ ACM SIGGRAPH 2008 General + Late Breaking Jury
- ♦ ACM SIGGRAPH ASIA 2008 Sketches & Posters
- ♦ Eurographics 2008 Short Papers

♦ ACM SIGGRAPH 2007 Sketches & Posters

Reviewer service

- ♦ Conferences: ACM SIGGRAPH, ACM SIGCHI, Foundations of Digital Games (FDG), Digital Games Research Association (DiGRA), Eurographics, Eurographics/ACM SIGGRAPH Symposium on Geometry Processing, Eurographics Symposium on Rendering, Graphics Interface, Eurographics/ACM SIGGRAPH Symposium on Computer Animation, Pacific Graphics, Shape Modeling International, ACM Solid and Physical Modeling Symposium, ACM Web3D, IndieCade, Motion in Games, Sketch-Based Interfaces and Modeling, User Interface Software and Technology (UIST), Virtual Reality Software and Technology (VRST)
- ◇ Journals: ACM Transactions on Graphics (TOG), IEEE Transactions on Visualization and Computer Graphics, IEEE Transactions on Image Processing, IEEE Computer Graphics and Applications, Computer Graphics Forum, Computers & Graphics, Computer Aided Geometric Design, Graphical Models, The Visual Computer, Mathematical Imaging and Vision, Computing and Cultural Heritage
- ♦ Organizations: International Game Developers Association (IGDA) Education SIG, Independent Games Festival (IGF), National Science Foundation (NSF), IndieCade

Talks at conferences, seminars, and museums (46)

- Simulating Strategy and Dexterity for Puzzle Games, IEEE Conference on Computational Intelligence and Games, New York City, August 2017
- Animation and Games: Emergent vs. Scripted, Freedom vs. Control, Ludology vs. Narratology, and Other Fun Culture Wars, ACM SIGGRAPH/Eurographics Symposium on Computer Animation (Invited Talk), LA, August 2017
- Computational Exploration of Shape, Animation, and Game Design Spaces,
 Game Technology Seminar, Utrecht University, May 2017
- Indie Soapbox: Tools and Creativity, Game Developers Conference (GDC), March 2016, http://www.gdcvault.com/play/1023540/Indie
- Exploring Game Space using Survival Analysis, Computer Graphics Symposium, The University of Tokyo, October 2015
- Exploring Game Space using Survival Analysis, Tri-State Workshop on Imaging and Graphics (Invited Talk), Columbia University, April 2015
- \diamond An Introduction to Minimalist Game Design, $Princeton\ University,$ Invited by Adam Finkelstein, Princeton, April 2015
- ♦ Teaching Games with Games: Flappy Bird as a Case Study in Design Education, Game Developers Conference (GDC), March 2015, http://www.gdcvault.com/play/1022280/Teaching-Games-with-Games-2

- Game Design 101, 30 Weeks, A Founders Program for Designers, https://www.30weeks.com/#collaborators, NYC, October 2014
- Graphics & Games: Learning from and Contributing to Disjoint Communities,
 Tri-State Workshop on Imaging and Graphics (Invited Talk), Princeton, 2014
- Ascension: a Case Study in Deckbuilding Games, Digital Games Research Association (DiGRA), August 2013
- RigMesh: Automatic Rigging for Part-Based Shape Modeling and Deformation (Invited Talk), Tri-State Workshop on Imaging and Graphics, MIT, 2013
- RigMesh: Automatic Rigging for Part-Based Shape Modeling and Deformation, The University of Tokyo, December 2012
- Inspiration, Introspection, Depth, Critique, and Insight (Invited Talk) ArtsTech @ EYEBEAM, http://www.meetup.com/Arts-Culture-and-Technology/ events/76664642/, New York, August 2012
- The Minimalist Game Design of Osmos, School of Visual Arts, SVA, New York, April 2012
- ♦ Minimalist Game Design Principles, NYU ITP, New York, April 2012
- Minimal vs Elaborate, Simple vs Complex and the Space Between, Game Developers Conference (GDC), March 2012, http://www.gdcvault.com/play/1015535/Minimal-vs-Elaborate-Simple-vs
- Games as Space: A dialogue between Casey Reas and Andrew Nealen (Invited Talk), New Museum, New York, December 2011, http://archive.newmuseum.org/index.php/Detail/Occurrence/Show/occurrence_id/1440
- ♦ Towards Minimalist Game Design, Foundations of Digital Games, Bordeaux, France, June 2011
- ♦ Minimalist Game Design (Invited Talk), TEDx Rutgers, April 2011
- Minimalism and Osmos: A Postmortem (Invited Talk), Game Developers Conference China (GDC China), Shanghai, December 2010, http://www.gdcvault.com/play/1013999/Minimalism-and-OSMOS-a-Post
- ♦ Minimalist Game Design Principles, NYU ITP, New York, October 2010
- ♦ Minimalism and Osmos: A Postmortem, IndieCade, Los Angeles, Oct 2010
- ♦ Minimalist Game Design: Growing Osmos, USC, August 2010
- Minimalist Game Design: Growing Osmos, Game Developers Conference (GDC), March 2010, http://www.gdcvault.com/play/1012298/Minimalist-Game-Design-Growing
- Measuring and Modeling Human Preference for Viewpoint Selection and Video Games, MIT Computer Graphics Seminar, Boston, February 2010
- Contemporary Video Game Design Challenges: Visualization, Interaction and Simulation, Rutgers Perceptual Science Seminar, September 2009
- Contemporary Video Game Design Challenges: Visualization, Interaction and Simulation, DIMACS Workshop on Algorithmic Mathematical Art (Invited

- Talk), June 2009, https://www.youtube.com/watch?v=5nfUA2eEeTY
- ♦ Simple 3D Content Creation Tools (Invited Talk), IGDA NY, October 2008
- ♦ In Search of the Human Video-Out, Rutgers, October 2008
- ♦ FiberMesh and SilSketch, Rutgers, The State University of New Jersey, 2008
- ♦ FiberMesh and SilSketch, Princeton Graphics Group, April 2008
- Interfaces and Algorithms for the Creation, Modification, and Optimization of Surface Meshes, Polytechnic University of Catalonia, Barcelona, Feb 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
- \diamond 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 (Invited Talk),
 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

Host and interviewer for the *Indie Tech Talk* series at NYU (25)

- Indie Tech Talk 27: Preserving a Sense of Discovery in the Age of Spoilers,
 Jim Crawford, https://www.youtube.com/watch?v=Rtqf51Gc_Hg, May 2015
- ♦ Indie Tech Talk 26: Teaching with Puzzles, *Itay Keren & Julia Detar Keren*, https://www.youtube.com/watch?v=6cItzLFOBeg, April 2015

- ♦ Indie Tech Talk 25: Minimalism and Iteration, with Andy Wallace, https://www.youtube.com/watch?v=FvdJU23L56U, March 2015
- ♦ Indie Tech Talk 24: Bending Tech to Cibele's Will, Nina Freeman & Emmett Butler, https://www.youtube.com/watch?v=r9Ag5JjQSkM, January 2015
- ♦ Indie Tech Talk 23: Cheeky Designs, with Robert Yang, https://www.youtube.com/watch?v=t0ihl0A8JH0, December 2014
- ♦ Indie Tech Talk 22: Coffee: A Misunderstanding, with Deidra Kiai, https://www.youtube.com/watch?v=ydWsarBTa5Q, November 2014
- ♦ Indie Tech Talk 21: Implementing Beat-em-up Combat Systems, with Matthew Wegner, https://www.youtube.com/watch?v=XG90h-2SmUY, October 2014
- Indie Tech Talk 20: Flailing, Screaming, and Laughing, with Jane Friedhoff, https://www.youtube.com/watch?v=5BYhKHzHWg8, October 2014
- Indie Tech Talk 19: Programmers, Who Needs Em?, with Johnnemann Nordhagen, https://www.youtube.com/watch?v=GPcnQ8b2-zA, May 2014
- ♦ Indie Tech Talk 18: Dialog Systems in Double Fine Games, with Anna Kipnis, https://www.youtube.com/watch?v=o76JAP_9GkA, April 2014
- ♦ Indie Tech Talk 17: Freefalling Through the Goldilocks Zone, with Andy Hull, https://www.youtube.com/watch?v=6GWavyfFbIY, March 2014
- ♦ Indie Tech Talk 16: Three Games, with Eddo Stern, February 2014
- Indie Tech Talk 15: Accelerometers, How Do They F*cking Work?, with Doug Wilson, http://livestre.am/41715, December 2013
- Indie Tech Talk 14: Fat Fingers, with Janet Gilbert, http://livestre.am/
 4GKNc, November 2013
- ♦ Indie Tech Talk 13: Games, Exploration and Abstractions (The Toy Ball and the Moon), with Marc Ten Bosch, http://livestre.am/4ES98, October 2013
- ♦ Indie Tech Talk 12: Making Hokra, with Ramiro Corbetta, https://www.youtube.com/watch?v=PBbZQS1K0jQ, September 2013
- ♦ Indie Tech Talk 11: Humanist Game Design, with Adam Saltsman, https://www.youtube.com/watch?v=FNoJay5LUio, May 2013
- ♦ Indie Tech Talk 10: The 6502 and You, with Don Miller, https://www.youtube.com/watch?v=BTHf8nLupq0, April 2013
- ♦ Indie Tech Talk 09: Talking about CENTIPEDE +30, with Dona Bailey, https://www.youtube.com/watch?v=EroNgxCsGk4, March 2013
- Indie Tech Talk 08: Conceptual Art as Technical Practice, with Zach Gage, https://www.youtube.com/watch?v=N_XxwQKUoJU, February 2013
- ♦ Indie Tech Talk 07: Building BaraBariBall and Beyond, with Noah Sasso, https://www.youtube.com/watch?v=lvT7PnjFLw0, January 2013
- Indie Tech Talk 04: Engines, Frameworks and means of Production, with Ivan Safrin, https://www.youtube.com/watch?v=mZOSOmfkAjA, October 2012

- ♦ Indie Tech Talk 03: Punks not Thre(e)-D, with Kevin Cancienne, https://www.youtube.com/watch?v=KPdRDVDiGas, September 2012
- ♦ Indie Tech Talk 02: Simple Technology and the Game Experience, with Kaho Abo, https://www.youtube.com/watch?t=12&v=Hb3sFdpbuf8, May 2012
- ♦ Indie Tech Talk 01: Fun with Signed Distance Fields, with Scott Anderson, https://www.youtube.com/watch?t=22&v=DXFEOI2SsNY, April 2012

INTERNAL SERVICE

New York University

- ♦ Member of the CSE undergraduate committee, 2016—
- ♦ Co-director of the NYU Game Innovation Lab, 2015—
- ♦ Director, CSE Game Engineering undergraduate minor, 2014—
- ♦ Member of the media and games network (MAGNET) presidium, 2014—
- ♦ Member of the NYU Game Center game programming committee, 2014—
- ♦ Member of the CSE Game Engineering undergraduate major committee, 2014—
- ♦ Chair of the committee for the AY 2014/2015 NYU Abu Dhabi (NYUAD) search for outstanding faculty in computer science
- ♦ Member of the committee for the 2015 NYU CSE search in cybersecurity
- ♦ Member of the committee for the 2015 NYU CSE search for teaching faculty
- ♦ Interim director of the NYU Game Innovation Lab, 2014–2015
- ♦ Member of the ad-hoc Ph.D. requirements committee, 2013–2014
- ♦ Co-organizer of the annual NYU PRACTICE game design conference, 2012—

Rutgers University

- ♦ Member of the undergraduate curriculum committee, 2008–2012
- ♦ Member of the faculty recruiting committee, 2010–2012
- ♦ Member of the outreach and PR committee, 2008–2010

Press & Media

- Vox Media: "How worried should we be about artificial intelligence? I asked 17 experts." (2017)http://www.vox.com/conversations/2017/3/8/14712286/artificial-intelligence-science-technology-robots-singularity-automation
- ♦ US Gamer: "Digital Gems: Osmos is Surreal, Soothing, Magnificent" (2017) http://www.usgamer.net/articles/digital-gems-osmos-is-surreal-soothing-magnificent
- Technical.ly Brooklyn: "The more you play a game, the less likely you are to get a high score" (2016) https://technical.ly/brooklyn/2016/08/08/ according-to-science/
- Technical.ly Brooklyn: "Flappy Bird holds the key for figuring out the perfect difficulty in video games" (2016) https://technical.ly/brooklyn/2016/ 08/30/nyu-game-center-flappy-bird-case-study/

- ♦ Brooklyn Daily: "PC culture conquers Barclays! Stadium to host massive video game tournament" (2016) http://www.brooklyndaily.com/stories/2016/21/dtg-video-games-barclays-2016-05-20-bk.html
- ♦ Wheretoget.it: "What's The Future For Virtual Reality And Fashion?" (2016) http://wheretoget.it/magazine/future-of-fashion-tech
- The New Yorker: "Playdate" (2015) http://www.newyorker.com/culture/culture-desk/cover-story-playdate
- Phys.org: "New system makes 3-D animation easy" (2015) https://phys.org/news/2015-09-d-animation-easy.html
- Sloomberg: "Minecraft Fans Back Founders Decision, Wary of Microsoft" (September 2014) https://www.bloomberg.com/news/articles/2014-09-16/minecraft-fans-back-founder-s-decision-wary-of-microft
- ♦ The Simpsons: "Luca\$" (April 2014, episode 17) http://engineering.nyu.edu/news/2014/04/15/andy-nealens-osmos-game-simpsons
- NPR: "Put Down the Smartphone, Board Games Are Cool Now" (May 2014) http://www.wnyc.org/story/put-down-phone-board-games-are-cool-now/
- ♦ Cable Magazine: "The Anti-Disciplinarian" (2014) http://engineering.nyu.edu/cable/issue/spring-2014/news/faculty/anti-disciplinarian
- ♦ PBS: "The Creativity of Indie Games" (2012) http://video.pbs.org/video/ 2287049951/
- ♦ Tek Syndicate: "Andy Nealen of Osmos" (2012) https://teksyndicate.com/ 2012/04/19/andy-nealen-interview-osmos/
- New York Times: "Mobile Game Favorites of the Experts, of All Ages" (2011) http://www.nytimes.com/2011/11/03/technology/personaltech/mobile-game-favorites-of-the-experts. html
- WIRED: Osmos Review (9/10) http://www.wired.com/reviews/2011/11/
 osmos-app/
- ♦ TUAW: "2011 Apple Design Award winners announced" (2011) http://www.tuaw.com/2011/06/07/2011-apple-design-award-winners-announced/
- Another Castle: "An Interview with Andrew Nealen" (2010) http://www.another-castle.org/?p=30
- ♦ IGN.com: "Osmos iPad review" (2010). http://www.ign.com/articles/ 2010/07/09/osmos-ipad-review
- Huffington Post: "15 Best iPad Apps Every User Should Try" (2010) http://www.huffingtonpost.com/craig-kanalley/best-ipad-apps-must-haves_b_660970.html
- ♦ TIME: "The DIY Wave of Indie Gaming" http://ti.me/jz4aig
- Gamasutra: "2011 Independent Games Festival Debuts Jury For Seumas Mc-Nally Grand Prize" (2010)
 http://www.gamasutra.com/view/news/122741/2011_Independent_Games_

Festival_Debuts_Jury_For_Seumas_McNally_Grand_Prize.php

- ♦ Osmos named iPad game of the year 2010 by Apple Computer Inc. (2010) http://www.hemispheregames.com/2010/12/11/apples-ipad-game-of-the-year/
- ♦ Osmos named best all-time iPhone game on IGN (2010) http://www.ign.com/videos/2010/09/09/the-best-iphone-game-revealed
- ♦ Rutgers video feature on Prof. Nealen's research (2010) http://www.youtube.com/watch?v=iogLHvSqW5g
- ♦ NYT Magazine: "Can D.I.Y. Supplant the First-Person Shooter?" (2009) http://www.nytimes.com/2009/11/15/magazine/15videogames-t.html