PROF. DR. MARIO BOTSCH

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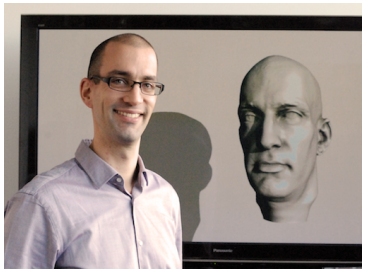

PERSONAL INFORMATION

1974	born in Bremen, Germany
Nationality	German
Marital status	married, one daughter
Languages	German, English

EDUCATION

2005	PhD in Computer Science (Dr. rer. nat., summa cum laude) *RWTH Aachen*
1999	MSc in Mathematics (Dipl. Math., summa cum laude) *University of Erlangen-Nürnberg*

ACADEMIC POSITIONS

Spring 2017	Visiting Professor *Visual Computing Institute, ETH Zurich*
since 2008	Professor for Computer Graphics & Geometry Processing *Faculty of Technology, Bielefeld University*
2005–2008	Lecturer & Senior Researcher *Computer Graphics Laboratory, ETH Zürich*
2001–2005	Research assistant & PhD student *Computer Graphics Group, RWTH Aachen*
1999–2000	Research assistant & PhD student *Computer Graphics Group, Max-Planck-Institute for Computer Science, Saarbrücken*

Last updated: March 23, 2018

AWARDS

2018 Best Journal Paper Award
IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR)

Teaching award Goldene Kreide for winter term 2017/2018
Faculty of Technology, Bielefeld University

2017 Teaching award Silberne Kreide for winter term 2016/2017
Faculty of Technology, Bielefeld University

2016 Runner-Up for Best Student Paper Award
IEEE Congress on Evolutionary Computation

2015 Best Paper Award
Eurographics Symposium on Geometry Processing

2014 Best Paper Award
International Meshing Roundtable

Teaching award Silberne Kreide for winter term 2013/2014
Faculty of Technology, Bielefeld University

2013 Eurographics Medical Prize (third place) for the CITmed project
Eurographics

Teaching award Goldene Kreide for winter term 2012/13
Faculty of Technology, Bielefeld University

2012 Teaching award Goldene Kreide for summer term 2012
Faculty of Technology, Bielefeld University

2011 Teaching award Goldene Kreide for summer term 2011
Faculty of Technology, Bielefeld University

Teaching award Silberne Kreide for winter term 2010/2011
Faculty of Technology, Bielefeld University

2010 Teaching award Goldene Kreide for winter term 2009/2010
Faculty of Technology, Bielefeld University

2008 Best Student Paper Award
Eurographics Symposium on Geometry Processing

Best Paper Award
Graphics Hardware

2007 Eurographics Young Researcher Award
Eurographics Association

Best Course Notes Award
ACM SIGGRAPH

2006 Best Paper Award
Eurographics Symposium on Geometry Processing

Borchers Medal for PhD thesis
RWTH Aachen

Nomination for Dissertation Award of Gesellschaft für Informatik
CS department of RWTH Aachen

2004 Best Paper Award
Journal of Computers & Graphics

PROJECTS & FUNDING

2018–2020 "Sparse Geometry Representations for Design Understanding and Cooperative Manipulation"
Industry cooperation with Honda Research Institute Europe, Germany
Sole PI, budget € 268 k.

2013–2018 "ICSPACE: Intelligent Coaching Space"
Large-scale project within Bielefeld's excellence cluster CITEC (DFG EXC 277)
Project coordinator (with S. Kopp and T. Schack), budget € 1.6 M.

2015–2017 "KogniHome – The Smart Apartment"
Innovation Cluster, funded by the Federal Ministry of Education and Research (BMBF)
PI, total budget € 11.3 M, own share € 222 k.

2014–2017 "Optimality of Adaptive Representations for Dynamic Evolutionary Optimization"
Industry cooperation with Honda Research Institute Europe, Germany
Sole PI, budget € 262 k.

2013 "Immersive Virtuelle Experimentier-Umgebung (CAVE)"
Major Installation (HBFG Großgerät), State NRW, Germany
Coordinator, budget € 300 k.

2013 "Non-Rigid Registration of Shoelast"
Industry project with Adidas GmbH, Germany
Sole PI, budget € 30 k.

2012 "Mesh Optimization for Numerical Simulation"
Industry cooperation with ABB Group, Switzerland
Sole PI, budget € 16 k.

2011–2014 "Constrained Deformation for Evolutionary Optimization"
Industry cooperation with Honda Research Institute Europe, Germany
Sole PI, budget € 231 k.

2010–2013 "Realtime Acquisition and Dynamic Modeling of Human Faces, Upper-Bodies, and Hands"
Research grant of German Research Foundation (DFG)
Sole PI, budget € 202 k.

2009–2012 "CITmed: Cognitive Interaction Technology for Medical Applications"
Research grant, program HighTech.NRW from State NRW, Germany
Project coordinator, budget € 1.7 M.

2009–2010 "Realtime Geometry Acquisition and Reconstruction"
Industry cooperation with confidential company
Sole PI, budget € 36 k.

2007–2008 "Physically-Based Modeling and Hardware Architectures for Point-Based Graphics"
Research grant from Swiss National Science Foundation (SNF)
PI, budget CHF 177 k.

2007 "Point-based Representations for 3D Picture and Video Processing"
Industry cooperation with Samsung, Korea
PI, budget $ 61 k.

ACADEMIC SERVICE ACTIVITIES

Editorial Board Memberships

since 2015 IEEE Transactions on Visualization and Computer Graphics
2016–2018 Computer-Aided Design
2015–2018 Graphical Models
2013–2016 Computer Graphics Forum
2010–2015 Computer & Graphics

Conference Organization

2017 Program co-chair, *Symposium on Solid and Physical Modeling*
Conference co-chair, *International Workshop on Virtual Social Interaction*

2016 Conference co-chair, *GI Workshop Virtual and Augmented Reality*
Program co-chair, *Symposium on Solid and Physical Modeling*

2015 Program co-chair, *Geometric Modeling & Processing*

2011 Program co-chair, *Eurographics Symposium on Geometry Processing*

2008 Conference co-chair, *Eurographics Symposium on Point-Based Graphics*

2007 Program co-chair, *Eurographics Symposium on Point-Based Graphics*

2006 Program co-chair, *Eurographics Symposium on Point-Based Graphics*

Program Committee Memberships

ACM SIGGRAPH (2009, 2010, 2013, 2014)
ACM SIGGRAPH Asia (2011, 2012, 2015, 2016)
Eurographics (2007, 2008, 2010, 2012, 2013, 2015, 2016, 2018)
Eurographics Symp. on Geometry Processing (2007–2010, 2012–2018)
Eurographics Symp. on Point-Based Graphics (2005)
Geometric Modeling and Processing (2014, 2018)

SIAM/ACM Geometric and Physical Modeling (2011)
ACM Symp. on Solid and Physical Modeling (2005, 2006, 2018)
Pacific Graphics (2006, 2007, 2009, 2010)
Shape Modeling International (2007–2009, 2011, 2012, 2016, 2017, 2018)
Vision, Modeling, and Visualization (2006–2009, 2012–2017)
Symp. on 3D Data Processing, Visualization, and Transmission (2008)
Jahrestagung Deutsche Gesellschaft Med. Physik (2008)

SERVICE ACTIVITIES AT BIELEFELD UNIVERSITY

since 2016 Equal Opportunities Commission, Faculty of Technology
since 2016 Teaching Commisson, Faculty of Technology
since 2010 Faculty Conference, Faculty of Technology

2013–2015 **Dean, Faculty of Technology**
2010–2013 Vice Dean, Faculty of Technology
2010–2013 Senate of Bielefeld University
2009–2011 Teaching Commisson, Faculty of Technology
2009–2015 Head of Admission Committee for Bachelor programm *Media Informatics*

PUBLICATIONS

This section list different kinds of publications, such as journal articles, conference papers, books and book chapters, or course notes. For most of these publications, pre-prints, supplementary materials, or videos can be accessed at http://graphics.uni-bielefeld.de/publications/. My Google Scholar profile can be found at https://scholar.google.com/citations?user=VSiwBoYAAAAJ.

Peer-reviewed Journal & Conference Publications

[1] Martin Komaritzan, Mario Botsch: *Projective Skinning*, Proc. of ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games, 2018, to appear.

[2] Thomas Waltemate, Dominik Gall, Daniel Roth, Mario Botsch, Marc Erich Latoschik: *The Impact of Avatar Personalization and Immersion on Virtual Body Ownership, Presence, and Emotional Response*, IEEE Transactions on Visualization and Computer Graphics 24(4), (Proc. **IEEE VR**), 2018, pp. 1643–1652. **Best journal paper award**.

[3] Christian Poth, Rebecca Foerster, Christian Behler, Ulrich Schwanecke, Werner Schneider, Mario Botsch: *Ultra-high temporal resolution of visual presentation using gaming monitors and G-Sync*, Behavior Research Methods, 50(1), 2018, pp. 26–38.

[4] Jan Philip Göpfert, Christina Göpfert, Mario Botsch, Barbara Hammer: *Effects of Variability in Synthetic Training Data on Convolutional Neural Networks for 3D Head Reconstruction*, Proc. of IEEE Symposium Series on Computational Intelligence, 2017.

[5] Jascha Achenbach, Thomas Waltemate, Marc Latoschik, Mario Botsch: *Fast Generation of Realistic Virtual Humans*, Proc. of ACM Symposium on Virtual Reality Software and Technology, 2017, pp. 12:1–12:10.

[6] Marc Latoschik, Daniel Roth, Dominik Gall, Jascha Achenbach, Thomas Waltemate, Mario Botsch: *The Effect of Avatar Realism in Immersive Social Virtual Realities*, Proc. of ACM Symposium on Virtual Reality Software and Technology, 2017, pp. 39:1–39:10.

[7] Felix Hülsmann, Andreas Richter, Stefan Kopp, Mario Botsch: *Accurate Temporal Alignment for Online Error Analysis of Human Motor Performances*, Proc. of ACM Motion in Games, 2017, pp. 7:1–7.6.

[8] Lorenz Dehn, Leona Kater, Martina Piefke, Mario Botsch, Martin Driessen, Thomas Beblo *Training in a comprehensive everyday-like virtual reality environment compared to computerized cognitive training for patients with depression*, Computers in Human Behavior 79, 2017, pp. 40–52.

[9] Charlotte Diehl, Birte Schiffhauer, Friederike Eyssel, Jascha Achenbach, Sören Klett, Mario Botsch, Stefan Kopp: *Get One or Create One: The Impact of Graded Involvement in a Selection Procedure for a Virtual Agent on Satisfaction and Suitability Ratings*, Proc. of International Conference on Intelligent Virtual Agents, 2017, pp. 109–118.

[10] Iwan de Kok, Felix Hülsmann, Thomas Waltemate, Cornelia Frank, Julian Hough, Thies Pfeiffer, David Schlangen, Thomas Schack, Mario Botsch, Stefan Kopp: *The Intelligent Coaching Space: A Demonstration*, Proc. of International Conference on Intelligent Virtual Agents, 2017, pp. 105–108.

[11] Roger Blanco i Ribera, Eduard Zell, J.P. Lewis, Junyong Noh, Mario Botsch: *Facial Retargeting with Automatic Range of Motion Alignment*, ACM Trans. on Graphics 36(4), (Proc. **ACM SIGGRAPH**), 2017, pp. 154:1–154:12.

[12] Andreas Richter, Stefan Menzel, Mario Botsch: *Preference-guided Adaptation of Deformation Representations for Evolutionary Design Optimization*, Proc. of IEEE Congress on Evolutionary Computation, 2017, pp. 2110-2119.

[13] Matthias Schröder, Thomas Waltemate, Jonathan Maycock, Tobias Röhlig, Helge Ritter, Mario Botsch: *Design and Evaluation of Reduced Marker Layouts for Hand Motion Capture*, Computer Animation and Virtual Worlds, 2017, e1751.

[14] Sebastian Schindler, Eduard Zell, Mario Botsch, Johanna Kissler, *Differential effects of face-realism and emotion on event-related brain potentials and their implications for the uncanny valley theory*, **Scientific Reports** 7, 45003, 2017.

[15] Andreas Richter, Jascha Achenbach, Stefan Menzel, Mario Botsch: *Multi-objective Representation Setups for Deformation-based Design Optimization*, Proc. of Interna-

tional Conference on Evolutionary Multi-Criterion Optimization (EMO), Lecture Notes in Computer Science, vol. 10173, 2017, pp. 514-528.

[16] Rebecca Foerster, Christian Poth, Christian Behler, Mario Botsch, Werner Schneider: *Using the virtual reality device Oculus Rift for neuropsychological assessment of visual processing capabilities*, **Scientific Reports** 3, 37016, 2016.

[17] Thomas Waltemate, Irene Senna, Felix Hülsmann, Marieke Rohde, Stefan Kopp, Marc Ernst, Mario Botsch: *The Impact of Latency on Perceptual Judgments and Motor Performance in Closed-loop Interaction in Virtual Reality*, Proc. of ACM Symposium on Virtual Reality Software and Technology, 2016, pp. 27–35.

[18] Katja Wolf, Changil Kim, Henning Zimmer, Christopher Schroers, Mario Botsch, Olga Sorkine-Hornung, Alexander Sorkine-Hornung: *Point Cloud Noise and Outlier Removal for Image-Based 3D Reconstruction*, Proc. of International Conference on 3D Vision, 2016.

[19] Babak Hosseini, Felix Hülsmann, Mario Botsch, Barbara Hammer: *Non-Negative Kernel Sparse Coding for the Analysis of Motion Data*, Proc. of International Conference on Artificial Neural Networks, 2016, pp. 506–514.

[20] Andreas Richter, Jascha Achenbach, Stefan Menzel, Mario Botsch: *Evolvability as a Quality Criterion for Linear Deformation Representations in Evolutionary Optimization*, Proc. of IEEE Congress on Evolutionary Computation, 2016, pp. 901–910. **Best student paper runner-up**.

[21] Daniel Sieger, Sergius Gaulik, Jascha Achenbach, Stefan Menzel, Mario Botsch: *Constrained Space Deformation Techniques for Design Optimization*, Computer Aided Design 72, 2016, pp. 40–51.

[22] Jonathan Maycock, Tobias Röhlig, Matthias Schröder, Mario Botsch, Helge Ritter: *Fully Automatic Optical Motion Tracking using an Inverse Kinematics Approach*, Proc. of IEEE-RAS International Conference on Humanoid Robots, 2015, pp. 461–466.

[23] Matthias Schröder, Jonathan Maycock, Mario Botsch: *Reduced Marker Layouts for Optical Motion Capture of Hands*, Proc. of ACM Motion in Games, 2015, pp. 7–16. **One of top-5 papers, invited for a journal submission**.

[24] Thomas Waltemate, Felix Hülsmann, Thies Pfeiffer, Stefan Kopp, Mario Botsch: *Realizing a Low-latency Virtual Reality Environment for Motor Learning*, Proc. of ACM Symposium on Virtual Reality Software and Technology, 2015, pp. 139–147.

[25] Iwan de Kok, Julian Hough, Felix Hülsmann, Mario Botsch, David Schlangen, Stefan Kopp: *A Multimodal System for Real-Time Action Instruction in Motor Skill Learning*, Proc. of ACM International Conference on Multimodal Interaction, 2015, pp. 355–362.

[26] Eduard Zell, Carlos Aliaga, Adrian Jarabo, Katja Zibrek, Diego Gutierrez, Rachel McDonnell, Mario Botsch: *To Stylize or not to Stylize? The Effect of Shape and Material Stylization on the Perception of Computer-Generated Faces*, ACM Trans. on Graphics 34(6), (Proc. **ACM SIGGRAPH Asia**), 2015, pp. 184:1–184:12.

[27] Jascha Achenbach, Eduard Zell, Mario Botsch: *Accurate Face Reconstruction through Anisotropic Fitting and Eye Correction*, Proc. of Vision, Modeling and Visualization, 2015, pp. 1–8.

[28] Felix Hülsmann, Cornelia Frank, Thomas Schack, Stefan Kopp, Mario Botsch: *Multi-Level Analysis of Motor Actions as a Basis for Effective Coaching in Virtual Reality*, Proc. of International Symposium on Computer Science in Sport, 2015, pp. 211–214.

[29] Andrea Tagliasacchi, Matthias Schröder, Anastasia Tkach, Sofien Bouaziz, Mario Botsch, Mark Pauly: *Robust Articulated-ICP for Real-Time Hand Tracking*, Computer Graphic Forum 34(5) (Proc. of Eurographics Symp. on Geometry Processing), 2015, pp. 101–114. **Best Paper Award**.

[30] Andreas Richter, Mario Botsch, Stefan Menzel: *Evolvability of Representations in Complex System Engineering: a Survey*, Proc. of IEEE Congress on Evolutionary Computation, 2015, pp. 1327–1335.

[31] Daniel Sieger, Stefan Menzel, Mario Botsch: *On Shape Deformation Techniques for Simulation-based Design Optimization*, SEMA SIMAI Springer Series, 2015, pp. 281–303.

[32] Matthias Schröder, Mario Botsch: *Online Adaptive PCA for Inverse Kinematics Hand Tracking*, Proc. of Vision, Modeling and Visualization, 2014, pp. 111–118.

[33] Daniel Sieger, Stefan Menzel, Mario Botsch: *Constrained Space Deformation for Design Optimization*, Proceedia Engineering 82 (Proc. of International Meshing Roundtable), 2014, pp. 114–126. **Best Paper Award**. **Invited for a journal submission**.

[34] Thomas Waltemate, Björn Sommer, Mario Botsch: *Membrane Mapping: Combining Mesoscopic and Molecular Cell Visualization*, Proc. of Eurographics Workshop on Visual Computing for Biology and Medicine, 2014, pp. 89–96.

[35] Leslie Theunissen, Michael Hertrich, Cord Wiljes, Eduard Zell, Christian Behler, Andre Krause, Holger Bekemeier, Philipp Cimiano, Mario Botsch, Volker Dürr: *A Natural Movement Database for Management, Documentation, Visualization, Mining and Modeling of Locomotion Experiments*, Proc. of Living Machines, 2014, pp. 308–319.

[36] Francesco Bonarrigo, Alberto Signoroni, Mario Botsch: *Deformable Registration using Patch-Wise Shape Matching*, Graphical Models 76(5), (Proc. Geometric Modeling and Processing), 2014, pp. 554–565 .

[37] Matthias Schröder, Jonathan Maycock, Helge Ritter, Mario Botsch: *Real-Time Hand Tracking using Synergistic Inverse Kinematics*, Proc. of IEEE International Conference on Robotics and Automation (ICRA), 2014, pp. 5447–5454.

[38] Daniel Sieger, Stefan Menzel, Mario Botsch: *RBF Morphing Techniques for Simulation-based Design Optimization*, Engineering with Computers, 30(2), 2014, pp. 161–174.

[39] Philip Grewe, Denise Lahr, Agnes Kohsik, Eugen Dyck, Hans Markowitsch, Christian Bien, Mario Botsch, Martina Piefke: *Real-life memory and spatial navigation in patients with focal epilepsy: Ecological validity of a virtual-reality supermarket task*, Epilepsy & Behavior 31, 2014, pp. 57–66.

[40] Eugen Dyck, Thies Pfeiffer, Mario Botsch: *Evaluation of Surround-View and Self-Rotation in the OctaVis VR-System*, Proc. of Joint Virtual Reality Conference, 2013, pp. 1–8.

[41] Eduard Zell, Mario Botsch: *ElastiFace: Matching and Blending Textured Faces*, Proc. of International Symposium on Non-Photorealistic Animation and Rendering, 2013, pp. 15–24.

[42] Matthias Schröder, Jonathan Maycock, Helge Ritter, Mario Botsch: *Analysis of Hand Synergies for Inverse Kinematics Hand Tracking*, Proc. of ICRA/IROS Workshop on Hand Synergies, 2013.

[43] Eduard Zell, Eugen Dyck, Agnes Kohsik, Philip Grewe, David Flentge, York Winter, Martina Piefke, Mario Botsch: *OctaVis: A Virtual Reality System for Clinical Studies and Rehabilitation*, Proc. of Eurographics Medical Prize Papers, 2013.

[44] Marion Dunyach, David Vanderhaeghe, Loïc Barthe, Mario Botsch: *Adaptive Remeshing for Real-Time Mesh Deformation*, Proc. of Eurographics Short Papers, 2013.

[45] Philip Grewe, Agnes Kohsik, David Flentge, Eugen Dyck, Christian Bien, York Winter, Mario Botsch, Hans J. Markowitsch, Martina Piefke: *Learning real-life cognitive abilities in a novel 360°-virtual reality supermarket: a neuropsychological study of healthy participants and patients with epilepsy*, Journal of NeuroEngineering and Rehabilitation 10(42), 2013.

[46] Matthias Schröder, Christof Elbrechter, Jonathan Maycock, Robert Haschke, Mario Botsch, Helge Ritter: *Real-Time Hand Tracking with a Color Glove for the Actuation of Anthropomorphic Robot Hands*, Proc. of IEEE-RAS International Conference on Humanoid Robots, 2012, pp. 262-269.

[47] Eugen Dyck, Eduard Zell, Agnes Kohsik, Philip Grewe, York Winter, Martina Piefke, Mario Botsch: *OctaVis: An Easy-to-Use VR-System for Clinical Studies*, Proc. of Virtual Reality Interaction and Physical Simulation, 2012, pp. 127–136.

[48] Eugen Dyck, Holger Schmidt, Martina Piefke, Mario Botsch: *OctaVis: Optimization Techniques for Multi-GPU Multi-View Rendering*, Journal of Virtual Reality and Broadcasting, 9(6), 2012.

[49] Daniel Sieger, Stefan Menzel, Mario Botsch: *High Quality Mesh Morphing Using Triharmonic Radial Basis Functions*, Proc. of International Meshing Roundtable, 2012, pp. 1–15. **One of top-10 papers, invited for a journal submission**.

[50] Eduard Zell, Mario Botsch: *Developing design guidelines for characters from analyzing empirical studies on the uncanny valley*, Proc. of ACM International Symposium on Facial Analysis and Animation, 2012.

[51] Daniel Sieger, Stefan Menzel, Mario Botsch: *A Comprehensive Comparison of Shape Deformation Methods in Evolutionary Design Optimization*, Proc. of International Conference on Engineering Optimization, 2012.

[52] Stefan Fröhlich, Mario Botsch: *Example-Driven Deformations Based on Discrete Shells*, Computer Graphics Forum 30(8), 2011, pp. 2246–2257.

[53] Daniel Sieger, Mario Botsch: *Design, Implementation, and Evaluation of the* `Surface_mesh` *Data Structure*, International Meshing Roundtable, 2011, pp. 533–550.

[54] Janick Martinez Esturo, Christian Rössl, Stefan Fröhlich, Mario Botsch, Holger Theisel: *Pose Correction by Space-Time Integration*, Vision, Modeling & Visualization, 2011, pp. 33–40.

[55] Eugen Dyck, Holger Schmidt, Mario Botsch: *OctaVis: A Simple and Efficient Multi-View Rendering System*, Proc. of GI VR/AR Workshop, 2010, pp. 1–8. **One of top-3 papers, invited for a journal submission**.

[56] Daniel Sieger, Pierre Alliez, Mario Botsch: *Optimizing Voronoi Diagrams for Polygonal Finite Element Computations*, Proc. of 19th International Meshing Roundtable, 2010, pp. 335–350.

[57] Sebastian Martin, Peter Kaufmann, Mario Botsch, Eitan Grinspun, Markus Gross: *Unified Simulation of Elastic Rods, Shells, and Solids*, ACM Trans. on Graphics 29(3), (Proc. **ACM SIGGRAPH**), 2010, pp. 39:1–39:10.

[58] Peter Kaufmann, Sebastian Martin, Mario Botsch, Eitan Grinspun, Markus Gross: *Enrichment Textures for Detailed Cutting of Shells*, ACM Trans. on Graphics 28(3), (Proc. **ACM SIGGRAPH**), 2009, pp. 50:1–50:10.

[59] Peter Kaufmann, Sebastian Martin, Mario Botsch, Markus Gross: *Flexible Simulation of Deformable Models Using Discontinuous Galerkin FEM*, Journal of Graphical Models 71(4), 2009, pp. 153–167.

[60] Roland Angst, Nils Thuerey, Mario Botsch, Markus Gross: *Robust and Efficient Wave Simulations on Deforming Meshes*, Computer Graphics Forum 27(7) (Proc. Pacific Graphics), 2008, pp. 1895–1900.

[61] Sebastian Martin, Peter Kaufmann, Mario Botsch, Martin Wicke, Markus Gross: *Polyhedral Finite Elements Using Harmonic Basis Functions*, Computer Graphics Forum 27(5) (Proc. Symp. on Geometry Processing), 2008, pp. 1521–1529. **Best Student Paper Award**.

[62] Mario Botsch, Olga Sorkine: *On Linear Variational Surface Deformation Methods*, IEEE Transactions on Visualization and Computer Graphics (TVCG) 14(1), 2008, pp. 213–230.

[63] Peter Kaufmann, Sebastian Martin, Mario Botsch, Markus Gross: *Flexible Simulation of Deformable Models Using Discontinuous Galerkin FEM*, ACM SIGGRAPH / Eurographics Symp. on Computer Animation, 2008, pp. 105–115. **One of top-3 papers, invited for a journal submission**.

[64] Bernd Bickel, Mario Botsch, Miguel Otaduy, Manuel Lang, Markus Gross: *Pose-Space Animation and Transfer of Facial Details*, ACM SIGGRAPH / Eurographics Symp. on Computer Animation, 2008, pp. 57-66.

[65] Simon Heinzle, Gaël Guennebaud, Mario Botsch, Markus Gross: *A Hardware Processing Unit for Point Sets*, Graphics Hardware 2008, pp. 21–31. **Best Paper Award**.

[66] Mario Botsch, Martin Wicke, Markus Gross: *Finite Elemente Methoden auf konvexen Polyedern für physikalisch-basierte Schnittsimulationen*, DGMP 2008.

[67] Mario Botsch, Mark Pauly, Martin Wicke, Markus Gross: *Adaptive Space Deformations Based on Rigid Cells*, Computer Graphics Forum 26(3), (Proc. Eurographics), 2007, pp. 339–347.

[68] Martin Wicke, Mario Botsch, Markus Gross: *A Finite Element Method on Convex Polyhedra*, Computer Graphics Forum 26(3), (Proc. Eurographics), 2007, pp. 355–364.

[69] Bernd Bickel, Mario Botsch, Roland Angst, Wojciech Matusik, Miguel Otaduy, Hanspeter Pfister, Markus Gross: *Multi-Scale Capture of Facial Geometry and Motion*, ACM Trans. on Graphics 26(3), (Proc. **ACM SIGGRAPH**), 2007, pp. 30.1–30.10.

[70] Tim Weyrich, Simon Heinzle, Timo Aila, Stephan Oetiker, Mario Botsch, Daniel Fasnacht, Cyril Flaig, Simon Mall, Kaspar Rohrer, Norbert Felber, Hubert Kaeslin, Markus Gross: *A Hardware Architecture for Surface Splatting*, ACM Trans. on Graphics 26(3), (Proc. **ACM SIGGRAPH**), 2007, pp. 90.1–90.11.

[71] Martin Marinov, Mario Botsch, Leif Kobbelt: *GPU-Based Multiresolution Deformation using Approximate Normal Field Reconstruction*, Journal of Graphics Tools 12(1), 2007, pp. 27–46.

[72] Mario Botsch, Mark Pauly, Markus Gross, Leif Kobbelt: *PriMo: Coupled Prisms for Intuitive Surface Modeling*, Eurographics Symposium on Geometry Processing, 2006, pp. 11–20. **Best Paper Award**.

[73] Mario Botsch, Robert Sumner, Mark Pauly, Markus Gross: *Deformation Transfer for Detail-Preserving Surface Editing*, Vision, Modeling, and Visualization, 2006, pp. 357–364.

[74] Tobias Ritschel, Mario Botsch, Stefan Müller, *Multiresolution GPU Mesh Painting*, Eurographics Short Papers, 2006, pp. 17–20.

[75] Christian Sigg, Tim Weyrich, Mario Botsch, Markus Gross: *GPU-Based Ray-Casting of Quadratic Surfaces*, Eurographics Symposium on Point-Based Graphics, 2006, pp. 59–65.

[76] Mario Botsch: *High Quality Surface Generation and Efficient Multiresolution Modeling based on Triangle Meshes*, Lecture Notes in Informatics, D-6, GI-Edition "Ausgezeichnete Informatikdissertationen 2005", 2006, pp. 19–28.

[77] Mario Botsch, Leif Kobbelt: *Real-time shape editing using radial basis functions*, Computer Graphics Forum 24(3), (Proc. Eurographics), 2005, pp. 611–621.

[78] Mario Botsch, Alexander Hornung, Matthias Zwicker, Leif Kobbelt: *High quality surface splatting on today's GPUs*, Eurographics Symposium on Point-Based Graphics, 2005, pp. 17–24.

[79] Mario Botsch, David Bommes, Leif Kobbelt: *Efficient linear system solvers for geometry processing*, IMA conference on Mathematics of Surfaces, LNCS, Vol. 3604, 2005, pp. 62–83.

[80] Mario Botsch, Leif Kobbelt: *An intuitive framework for real-time freeform modeling*, ACM Trans. on Graphics 23(3), (Proc. **ACM SIGGRAPH**), 2004, pp. 630–634.

[81] Leif Kobbelt, Mario Botsch: *A survey of point-based techniques in computer graphics*, Computer & Graphics 28(6), 2004, pp. 801–814. **Best Paper Award**.

[82] Mario Botsch, David Bommes, Christoph Vogel, Leif Kobbelt: *GPU-based tolerance volumes for mesh processing*, Pacific Graphics, 2004, pp. 237–243.

[83] Mario Botsch, Michael Spernat, Leif Kobbelt: *Phong splatting*, Eurographics Symposium on Point-Based Graphics, 2004, pp. 25–32.

[84] Matthias Zwicker, Jussi Räsänen, Mario Botsch, Carsten Dachsbacher, Mark Pauly: *Perspective accurate splatting*, Graphics Interface, 2004, pp. 247–254.

[85] Mario Botsch, Leif Kobbelt: *A remeshing approach to multiresolution modeling*, Eurographics Symposium on Geometry Processing, 2004, pp. 189–196.

[86] Mario Botsch, Leif Kobbelt: *Multiresolution surface representations based on displacement volumes*, Computer Graphics Forum 22(3), (Proc. Eurographics), 2003, pp. 483–491.

[87] Mario Botsch, Leif Kobbelt: *High-quality point-based rendering on modern GPUs*, Pacific Graphics, 2003, pp. 335–343.

[88] Leif Kobbelt, Mario Botsch: *Feature sensitive mesh processing*, Spring Conference on Computer Graphics, 2003, pp. 17–22.

[89] Leif Kobbelt, Mario Botsch: *Freeform shape representations for efficient geometry processing*, Shape Modeling International, 2003, pp. 111–118.

[90] Mario Botsch, Stephan Steinberg, Stephan Bischoff, Leif Kobbelt: *OpenMesh — A generic and efficient polygon mesh data structure*, OpenSG Symposium, 2002.

[91] Mario Botsch, Andreas Wiratanaya, Leif Kobbelt: *Efficient high quality rendering of point sampled geometry*, Eurographics Workshop on Rendering, 2002, pp. 53–64.

[92] Mario Botsch, Leif Kobbelt: *Resampling feature and blend regions in polygonal meshes for surface anti-aliasing*, Computer Graphics Forum 20(3), (Proc. Eurographics), 2001, pp. 402–410.

[93] Mario Botsch, Leif Kobbelt: *A robust procedure to eliminate degenerate faces from triangle meshes*, Vision, Modeling & Visualization, 2001, pp. 283–289.

[94] Leif Kobbelt, Mario Botsch, Ulrich Schwanecke, Hans-Peter Seidel: *Feature sensitive surface extraction from volume data*, Computer graphics and interactive techniques, (Proc. **ACM SIGGRAPH**), 2001 pp. 57-66.

[95] Leif Kobbelt, Mario Botsch: *An interactive approach to point cloud triangulation*, Computer Graphics Forum 19(3), (Proc. Eurographics), 2000, pp. 479–487.

[96] Mario Botsch, Christian Rössl, Leif Kobbelt: *Feature sensitive sampling for interactive remeshing*, Vision, Modeling & Visualization, 2000, pp. 129–136.

Course Notes

[1] Olga Sorkine, Mario Botsch: *Interactive Shape Modeling and Deformation*, Eurographics Tutorial Notes, 2009.

[2] Mario Botsch, Mark Pauly, Leif Kobbelt, Pierre Alliez, Bruno Levy: *Geometric Modeling Based on Polygonal Meshes*, Eurographics Tutorial Notes, 2008.

[3] Mario Botsch, Mark Pauly, Leif Kobbelt, Pierre Alliez, Bruno Levy: *Geometric Modeling Based on Polygonal Meshes*, SIGGRAPH Course Notes, 2007. **Best Course Notes Award**.

[4] Mario Botsch, Mark Pauly, Christian Rössl, Stephan Bischoff, Leif Kobbelt: *Geometric Modeling Based on Triangle Meshes*, Eurographics Tutorial Notes, 2006.

[5] Mario Botsch, Mark Pauly, Christian Rössl, Stephan Bischoff, Leif Kobbelt: *Geometric Modeling Based on Triangle Meshes*, SIGGRAPH Course Notes, 2006.

[6] Leif Kobbelt, Stephan Bischoff, Mario Botsch, Kolja Kähler, Christian Rössl, Robert Schneider, Jens Vorsatz: *Geometric modeling based on polygonal meshes*, Eurographics Tutorial Notes, 2000.

Books & Book Chapters

[1] Mario Botsch, Leif Kobbelt, Mark Pauly, Pierre Alliez, Bruno Levy, *Polygon Mesh Processing*. AK Peters, ISBN 978-1-56881-426-1, 2010.

[2] Mario Botsch, Leif Kobbelt, *GPU Splatting*. In Markus Gross and Hanspeter Pfisters (editors), *Point-Based Graphics*, Elsevier / Morgan Kaufmann, 2007.

Edited Volumes

[1] Mario Botsch, Stefanie Hahmann, Jessica Zhang (guest editors), *Proceedings of Symposium on Solid & Physical Modeling 2017*, Computer Aided Design 90, 2017.

[2] Mario Botsch, Stefanie Hahmann, Scott Schaefer (guest editors), *Proceedings of Symposium on Solid & Physical Modeling 2016*, Computer Aided Design 78, 2016.

[3] Mario Botsch, Falai Chen, Andrew Gillette (guest editors), *Proceedings of Geometric Modeling and Processing 2015*, Computer Aided Geometric Design 35–36, 2015.

[4] Mario Botsch, Scott Schaefer (guest editors), *Proceedings of the Eurographics Symposium on Geometry Processing 2011*, Computer Graphics Forum 30(5), 2011.

[5] Mario Botsch, Renato Pajarola (guest editors), *Special Issue on Point-Based Graphics*, Computers & Graphics 32(2), 2008.

[6] Mario Botsch, Renato Pajarola, Baoquan Chen, Matthias Zwicker (editors), *Proceedings of the Eurographics Symposium on Point-Based Graphics*, Eurographics Association, 2007.

[7] Mario Botsch, Baoquan Chen, Raghu Machiraju, Torsten Möller (guest editors), *Special Issue on Point-Based and Volume Graphics*, Computers & Graphics 31(2), 2007.

[8] Mario Botsch, Baoquan Chen, Mark Pauly, Matthias Zwicker (editors), *Proceedings of the Eurographics Symposium on Point-Based Graphics*, Eurographics Association, 2006.

Theses

[1] Mario Botsch, *High Quality Surface Generation and Efficient Multiresolution Modeling based on Triangle Meshes*, PhD thesis RWTH Aachen, Shaker Verlag, ISBN 3-8322-4314-3, 2005.

[2] Mario Botsch, *3D Gesichtsmodellierung zur Operationsplanung*, Master thesis, University of Erlangen-Nürnberg, 1999.

Patents

[1] Jae Young Sim, Do Kyoon Kum, Kae Chang Lee, Gaul Guennebaud, Mario Botsch, Markus Gross, Robert Carnecky, *3D image processing method and apparatus for enabling efficient retrieval of neighboring point*, US Patent No. 8,363,049 B2, 2013.

TEACHING & SUPERVISION

Lectures

Winter 2017/18	Introduction to Computer Graphics, 3D Scanning and Geometry Processing
Winter 2016/17	Introduction to Computer Graphics, 3D Scanning and Geometry Processing
Summer 2016	Scientific Computing, Computer Animation
Winter 2015/16	Introduction to Computer Graphics
Summer 2015	3D Scanning and Character Animation
Winter 2014/15	Introduction to Computer Graphics
Summer 2014	Computer Animation
Winter 2013/14	Introduction to Computer Graphics, Geometric Modeling Based on Polygonal Meshes
Winter 2012/13	Introduction to Computer Graphics, Geometric Modeling Based on Polygonal Meshes
Summer 2012	Scientific Computing, Computer Animation
Winter 2011/12	Introduction to Computer Graphics, Geometric Modeling Based on Polygonal Meshes
Summer 2011	Scientific Computing, Computer Animation
Winter 2010/11	Introduction to Computer Graphics, Geometric Modeling Based on Polygonal Meshes

Summer 2010	Scientific Computing, Computer Animation
Winter 2009/10	Introduction to Computer Graphics, Geometric Modeling Based on Polygonal Meshes
Summer 2009	Scientific Computing
Winter 2008/09	Introduction to Computer Graphics, Geometric Modeling Based on Polygonal Meshes
Summer 2008	Surface Representations and Geometric Modeling
Winter 2007/08	Physically-Based Simulation in Computer Graphics
Summer 2007	Surface Representations and Geometric Modeling
Winter 2006/07	Physically-Based Simulation in Computer Graphics
Summer 2006	Physically-Based Simulation in Computer Graphics

Courses & Tutorials

2012 Pierre Alliez, Mario Botsch, Keenan Crane, Julie Digne, Justin Solomon, Etienne Vouga: *Two-day course on Geometry Processing*, Eurographics Symposium on Geometry Processing

2011 Pierre Alliez, Mario Botsch, Misha Kazhdan, Mark Pauly: *Two-day course on Geometry Processing*, Eurographics Symposium on Geometry Processing

2009 Olga Sorkine, Mario Botsch: *Half-day course on Interactive Shape Modeling and Deformation*, Eurographics

2008 Leif Kobbelt, Mario Botsch: *Full-day course on Geometric Modeling Based on Polygonal Meshes*, Eurographics Symposium on Geometry Processing

2008 Mario Botsch, Mark Pauly, Leif Kobbelt, Pierre Alliez, Bruno Levy: *Full day course on Geometric Modeling Based on Polygonal Meshes*, Eurographics

2007 Mario Botsch, Mark Pauly, Leif Kobbelt, Pierre Alliez, Bruno Levy: *Full-day course on Geometric Modeling Based on Polygonal Meshes*, ACM SIGGRAPH

2006 Mario Botsch, Mark Pauly, Christian Rössl, Stephan Bischoff, Leif Kobbelt: *Full-day course on Geometric Modeling Based on Triangle Meshes*, Eurographics

2006 Mario Botsch, Mark Pauly, Christian Rössl, Stephan Bischoff, Leif Kobbelt: *Full-day course on Geometric Modeling Based on Triangle Meshes*, ACM SIGGRAPH

2006 Mario Botsch, Mark Pauly: *Full-day course on Efficient Geometric Modeling with Polygonal Meshes*, ETH Zürich Industry Course

2004 Stephan Bischoff, Mario Botsch, Leif Kobbelt: *Half-day course on Freeform shape representations for efficient geometry processing*, Shape Modeling International

2000 Leif Kobbelt, Stephan Bischoff, Mario Botsch, Kolja Kähler, Christian Rössl, Robert Schneider, Jens Vorsatz: *Full-day course on Geometric modeling based on polygonal meshes*, Eurographics

PhD Students

since 2016 Martin Komaritzan
since 2014 Felix Hülsmann
since 2013 Thomas Waltemate
since 2012 Jascha Achenbach
since 2012 Andreas Richter

2015–2017 Jan Philip Göpfert
2010–2016 Eduard Zell
2012–2015 Matthias Schröder
2009–2014 Daniel Sieger
2009–2013 Eugen Dyck
2010–2012 Marion Dunyach (co-supervised, University of Toulouse)
2009–2012 Stefan Fröhlich
2009–2011 Jan Hammerschmidt
2007–2010 Sebastian Martin (co-supervised, ETH Zürich)
2007–2010 Peter Kaufmann (co-supervised, ETH Zürich)
2006–2008 Bern Bickel (co-supervised, ETH Zürich)
2006–2008 Simon Heinzle (co-supervised, ETH Zürich)

External Member of PhD Thesis Committees

2017 Tibor Stanko, *INRIA Imagine, Grenoble*
Behrend Heeren, *University of Bonn*
2015 Mario Deuss, *EPF Lausanne*
Melinos Averkiou, *University College London*
2013 Janick Martinez Esturo, *Magdeburg University*
Noura Faraj, *Telecom ParisTech*
Alec Jacobson, *ETH Zürich*
2012 Peter Kaufmann, *ETH Zürich*
2011 Tim Winkler, *University of Lugano*
Sebastian Martin, *ETH Zürich*
2010 Dong-Ming Yan, *University of Hong Kong*
Simon Flöry, *Vienna Technical University*
Michael Eigensatz, *ETH Zürich*
Iurie Chiosa, *Siegen University*
Nader Salman, *INRIA Sophia-Antipolis*

Supervised Student Theses

2018 Lars Oetermann, *Implicit Skinning*

Stephan Wenninger, *High-Quality Faces from Low-Quality Data*
Yannic Wietler, *Aligning Motion Capture Data*
Christoph Bösch, *High Quality Face Rendering*
Holger Bienek, *Impact of Feedback in VR Coaching*

2017 Andreas Kudenko, *Steg-Algorithmus fuer Schablonen*
Amerigo Mancino, *Putting on Glasses*
Stefan Dresselhaus, *FFD Control Grids for Design Optimization*

2016 Robert Feldhans, *High-Performance Bindless Rendering*
Tamino Huxohl, *Approximating Environmental Lighting*
Martin Komaritzan, *Lattice-Boltzmann Fluid Simulation*
Marcel Schuchmann, *In-Browser Rendering of Faces*
Yu Yi Yang, *Color Warping for Images*
Jan Patrick Recke, *Advanced Shadow Mapping*

2015 Jan Göpfert, *Self-Improving Blendshape Models*
Tristan Walter, *Motion Tracking of Stick Insects*
Christian Behler, *Theory of Visual Attention Test*
Sergius Gaulik, *Constrained Deformation*
Patrick Wallbaum, *Hand Tracking*
Damaris Moltzahn, *Singulärwertzerlegung zur Findung von Spektralfunktionen*
Philipp von Neumann-Cosel, *Advanced Character Animation*
Lars Oetermann, *Evaluation of the Unreal Engine on a Virtual Supermarket*

2014 Tristan Kenneweg, *Projective Dynamics*
Kai Zander, *Evaluation of Path Tracing and Photon Mapping*
Stefanie Fritz, *Volume Data Processing*
Lukas Kettenbach, *Physics Simulation in JavaScript*

2013 Martin Holland, *Scan me, print me*
Leroy Rügemer, *Information Visualization using Virtual Faces*
Andreas Langfeld, *Subdivision Surfaces*
Tristan Walter, *Presentation Viewer*
Christian Behler, *Visualization of Insect Motions in WebGL*
Robin Schiewer, *Camera-Based Motion Tracking of Insects*
Kai Banasiak, *Head- and Eye-Tracking in the OctaVis*

2012 Thomas Waltemate, *Molecule Rendering*
Philip Unruh, *Membrane Mapping and Molecule Visualization*
Matthias Esau, *Real-Time Rendering of Eyes*
Tillmann Funke, *Bounded Biharmonic Coordinates*
Anton Helwart, *Real-Time Simulation of Deformable Objects*
Jascha Achenbach, *Fitting Primitives by Discovering Global Relations*

2011 Lars Mödeker, *3D Face Scanning through Stereo Vision*
Mathias Heinrich, *Real-Time Motion Capturing with the Kinect*
Andreas Jagel, *Real-Time Cartoon Shading*
Christian Zentner, *Development of a Shader Framework*

Denis John, *3D-Scanning with the Kinect*
Velyana Stoycheva, *Short Film with 3D Studio Max*

2010 Kai Mismahl, *Particle-Based Fluid Simulation*
Thomas Waltemate, *GPU-Based Molecule Rendering*
Sabine Klein, *Character Animation through Motion Tracking*
Sebastian Walter, *Parallel Ray Tracing*
Andre Hilsendeger, *High Performance Mesh Rendering*
Stephan Brandauer, *2D Physics Engine*
Marcel Müller, *Implementation and Evaluation of a Multigrid Solver*
Ioannis Motougiorgos, *Interactive Virtual Character on the iPhone*

2009 Dorothe Schneider, *Line-Art Rendering of Motion-Tracked Characters*
Matthias Siemonsmeier, *Skeleton-Based Character Animation*
Stefan Wilsky, *2D Mesh Generation*
Frederik Steding, *3D Viewer on the iPhone*
Bastian Hebeler, *Ray Tracing Acceleration Techniques*
Jan-Eric Peitzmeier, *Monte Carlo Path Tracing*
Jan Hammerschmidt, *Surface Reconstruction from Range Scans*
Nikita Mattar, *Level Set Surface Editing*
Felix Rabe, *Real-Time Shape Deformation in VR Environments*
Daniel Sieger, *Polygonal Finite Elements*

2008 Dario Poggiali, *Parallel Geometry Processing*
Sercan Kirac, *Volumetric Mesh Generation*
Christoph Baumann, *Acquisition and Modeling of Human Body Shapes*

2007 Robert Carnecky, *Skeleton-Based Character Animation*
Sebastian Martin, *Spherical Parameterization*
Michael Gubser, *GPU-Based Surface Splatting*
Christoph Baumann, *PDEs on Meshes*

2006 Natalie Trommer, *Geometric Modeling Based on Thin Shells*
Stephan Classen, *Cubical Marching Squares*
Peter Hess, *Chache Optimizing Mesh Reordering*
Davide Marchetti, *Interactive Mesh Filtering*

2005 Alexander Klein, *Mesh Optimization by Remeshing*

2004 Benjamin Molitor, *Hardware Accelerated Global Illumination*
Michael Spernat, *Improved Surface Splatting using Phong-Splats*

PRESS & PUBLICITY

2018 TV spot about Virtual Avatars
WDR Lokalzeit

2017 "In zehn Minuten zum Avatar"
Article in *Westfalenblatt*

"In zehn Minuten zum virtuellen Zwilling"
Article in *Neue Westfälische*

"In zehn Minuten zum virtuellen Zwilling"
Bielefeld University Press Release (No. 189/2017)

"Warum Zuschauer Comicfiguren lieben, aber schnell vergessen"
Bielefeld University Press Release (No. 35/2017)

"In Cyberwelten fürs Überleben üben"
Article in *Psychologie Heute* 03/2017.

"Das visuelle Begreifen messen"
Article in *Westfalenblatt.*

2016 "Virtual Reha-lity"
Article in *Focus* 48/2016.

"Kniebeugen mit dem Avatar"
Article in *Focus Gesundheit* Dec/Jan 2016/17.

"VR at the Olympics"
Article in *Engineering and Technology Magazine (E&T)* 7/2016.

"Der virtuelle Kick"
Article in *Wunderwelt Wissen* 7/2016

TV spot about ICSPACE project
WDR Lokalzeit

"Perfektes Training im virtuellen Raum"
Article in *Neue Westfälische*

"Der intelligente virtuelle Trainingsraum"
Article in *Westfalenblatt*

"Intelligent Bewegung trainieren in der virtuellen Realität"
Bielefeld University Press Release (No. 23/2016)

"ICSPACE: Bewegung trainieren in der virtuellen Realität"
research_tv video clip of Bielefeld University

2015 "Forscher der Universität Bielefeld entwickeln Design-Optimierungs-Software"
Bielefeld University Press Release (No. 118/2015)

"An Inspector for the Virtual Wind Tunnel"
CITEC Newsletter 1/2015, Bielefeld University.

2014 "In der virtuellen Welt Tai-Chi und Golf perfektionieren"
BI.research 43

2013 TV spot about CITmed project
WDR Lokalzeit

"Reha im Supermarkt"
Online article of *Gehirn & Geist*

"Hirnschäden mit virtueller Realität therapieren"
Bielefeld University Press Release (No. 105/2013)

2011 "Rehabilitation of disturbed brain functions using Virtual Reality"
CITEC Newsletter 2/2011, Bielefeld University.

"Maschinen lernen vom Menschen"
Article in *Westfalenblatt*

"Gespräche mit virtuellen Menschen"
Article in *Neue Westfälische*

2010 "Reha im virtuellen Supermarkt"
Article in *Westfalenblatt*

"Physics-Based Simulation of Rods, Shells, and Solids"
CITEC Newsletter 2/2010, Bielefeld University.

"Universität Bielefeld erfolgreich im Ziel2.NRW-Wettbewerb Hightech.NRW"
Bielefeld University Press Release (No. 51/2010)

2009 "Computerspiel, Trickfilm und Modellierung"
Article in *Westfalenblatt*