

Bedrich Benes

Professor of Computer Graphics Technology
Purdue University Faculty Scholar
Director of the High Performance Computer Graphics Laboratory
Address: 1419 Knoy Hall
Purdue University
West Lafayette IN 47907
USA
Telephone: 765.496.2954
E-mail: bbenes@purdue.edu
WWW: <http://hpcg.purdue.edu/bbenes/>

Professional preparation:

Dec 1998 Ph.D., Computer Science, Czech Technical University in Prague,
Dissertation: *An Efficient Estimation of Light for Simulation of Plant Development*
Jun 1991 MS., Computer Science, Czech Technical University in Prague,
Thesis: *Visual Database*

Appointments:

August 2015 to present Professor of Department of Computer Graphics Technology,
Purdue University, USA
August 2010 to Aug 2015 Associate Professor of Department of Computer Graphics Technology,
Purdue University, USA
August 2011 to Aug 2012 Assistant Head of Department of Computer Graphics Technology,
Purdue University, USA
April 2005 to Aug 2010 Assistant Professor of Department of Computer Graphics Technology,
Purdue University, USA
Aug 2000 to Aug 2005 Assistant Professor of Department of Computer Science,
Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM), Mexico
July 1999 to Jun 2000 Visiting Professor of Department of Computer Science,
Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM), Mexico
June 1998 to Jul 1999 Assistant Professor of Computer Science
Czech Technical University in Prague, Czech Republic

Awards:

2017 Paper "Hädrich, T., Benes, B., Deussen, O., and Pirk, S (2017) Interactive Modeling and Authoring of Climbing Plants in Computer Graphics Forum" Best paper committee award Eurographics 2017 honorable mention
2014 Director of Purdue GPU Research Center
2012 Purdue University Outstanding Award in Discovery
2011 Purdue University Faculty Scholar
2011 Purdue University Outstanding Award in Discovery
2009 Early Faculty Discovery Award
2008 Winning poster at Tera Grid the 3rd annual conference
Ru Y., Sundaram V., Benes B., Zhao L., Song C.X., Bertoline, G.,
"Visualizing NWS NEXRAD II Data on Tera Grid"
2007 Winning poster at Computer Research Institute "Visualizing NWS NEXRAD II Data on Tera Grid"
Autors: Ru Y., Sundaram V., Benes B., Zhao L., Song C.X., Bertoline, G.,
2007 Winning poster at Sigma Xi Graduate Poster Competition: "An immersive granular material visualization system with haptics feedback" Authors: Dorjgotov, E., Benes, B., Madhavan, K., Arns, L., Bertoline, G.,
2007 Winning poster at the Undergraduate Research and Poster Symposium: "Autonomous Boids"
Authors: Hartman, Ch., Benes B.,
2005 Outstanding faculty award in discovery and technical development of Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM). Premio Rómulo Garza.
2003 Ken Brodli award for the best paper "Modeling Virtual Gardens by Autonomous Procedural Agents" at the IEEE International Conference Theory and Practice of Computer Graphics.
2003 Outstanding Faculty in Discovery of the Campus Ciudad de México of the Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM) of the year 2002
2002 Outstanding Graduate Advisor of the Campus Estado de México of the Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM) of the year 2002

Editor:

2018-2021 Editor in Chief of Computer Graphics Forum (Blackwell)
2014-2017 Associate Editor of Computer Graphics Forum (Blackwell)
Since 2012 Associate Editor of Computers & Graphics (Elsevier)
2012-2016 Associate Editor of Computer Animation and Virtual Worlds (Wiley)

- 2016 Associate Editor of IEEE Computer Graphics Applications, Special Issue on *Computational Design and Fabrication Meet Computer Graphics*
- 2012 Associate Editor of Computers & Graphics, Special Issue on *Procedural Modeling* (Elsevier)

Technical Papers Program Committee Member and Chair:

- 2017 Full papers chair of Eurographics 2017
- 2017 VISIGRAPP, IPC member
- Since 2015 Symposium on Geometry Processing, IPC member
- 2015 Siggraph Asia, IPC member
- 2013, 14, 17 Siggraph, IPC member
- 2012, 13 Extreme Science and Engineering Discovery Environment (XSEDE), IPC member
- Since-2012 Computer Graphics International (CGI), IPC member
- 2007, 10, 12-17 Eurographics, IPC member
- 2007 Poster Chair of Eurographics
- 2007 Eurographics Animation Theater, IPC member
- 2007 Co-chair IEEE Pacific Rim Symposium on Image Video and Technology, IPC member
- 2006-2010 Eurographics Workshop on Natural Phenomena, IPC member
- 2005 Central European Multimedia and Virtual Reality Conference, IPC member
- 2004-2013 Workshop in VR Interactions and Physical Simulations, IPC member
- 2014, 2017 Workshop on Procedural Content Generation in Games, IPC member
- Since 1998 Spring Conference on Computer Graphics, IPC member
- Since 1997 Winter School of Computer Graphics, IPC member

Reviewer:

- 2017 Journal of Microscopy
- 2016 Digital Applications in Archaeology and Cultural Heritage
- Since 2016 Plos One
- Since 2015 Shape Modeling International
- 2015 ACM Cultural Heritage
- 2015 Additive Manufacturing
- Since 2012 IEEE Transactions on Visualization and Computer Graphics
- 2012 Computer Graphics International
- 2011 ACM Journal of Computing and Cultural Heritage
- 2011 International Journal of Computational Fluid Dynamics
- Since 2010 IEEE Computer Graphics & Applications
- 2009 Journal of Plant Physiology
- 2008 Journal of Virtual Reality and Broadcasting
- Since 2009 Journal of Patter Recognition
- Since 2009 Journal of Computer Graphics and Virtual Worlds
- Since 2005 ACM Transactions on Graphics
- Since 2005 Computer Graphics Forum
- Since 2008 IVEVA conference
- Since 2007 TeraGrid conference
- Since 2007 CGV
- 2007 Eurographics State of The Art Papers
- Since 2005 Eurographics
- 2004 Graphics Interface (IEEE)
- 2002-2003 ACM SIGGRAPH Course
- 2002 International Conference on Computer Graphics and Visualization (IEEE)

Proposal Reviewer:

- National Science Foundation
- National Institutes of Health
- Consejo Nacional de Ciencia y Tecnología (Mexico)
- Czech Ministry of Education

Invited Talks:

- 2017 Czech Technical University in Prague – Vegetation Modeling in Computer Graphics
- 2015 Tecnológico de Monterrey - Inverse Procedural Modeling
- 2014 Indiana Horticultural Congress - Self-Adapting Botanical Tree Models in Computer Graphics
- 2013 INRIA Grenoble, IMAGINE – Inverse Procedural Modeling
- 2013 Czech Technical University in Prague – Purdue University
- 2013 Czech Technical University in Prague – Inverse Procedural Modeling
- 2012 University of San Juan Bogota - Complex Cities, Biologically-Based Plants,

	and Terrain Modeling for Computer Graphics
2011	Siggraph Bogota 2011 – Virtual Landscaping
2011	Back to Class - New and Improved: How Computer Graphics Technology is Changing Everyday Life - Purdue President's Council -
2011	Delft University – Inverse Procedural Modeling
2011	The Best of Eurographics at FMX - 16th Conference on Animation, Effects, Games and Interactive Media
2011	Department of Computer Science, University of Konstanz Germany
2010	Virtual Landscaping at the International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision
2009	Computer Graphics Applications in Forestry Products, at Purdue University, Department of Forestry
2007	Hydraulic Erosion in Computer Graphics at Brigham Young University, Department of Computer Science
2006	Hydraulic Erosion: A survey at ACM Spring Conference on Computer Graphics
2005	Computer Graphics at the V Symposium de Computación
2005	Hydraulic Erosion at St. Louis University, Department of Computer Science Oct 2007
2004	Computer Graphics, what is happening? At Segundo Congreso de Ingeniería en Sistemas Computacionales Instituto Tecnológico Superior de Poza Rica, México
2003	Artificial Life and Computer Graphics at Telecomunicaciones Electrónica y Computación, México
2000	Artificial Life and Computer Graphics at Mexican International Conference on Artificial Intelligence, MICAI'2000, Acapulco 2000
1999	Virtual Plants Charles University Prague, Faculty of Biology, Czech Republic
1995	Modeling of plant development Technical University Delft, Netherlands

Thesis supervision:

- Graduated 6 Ph.D. and 52 M.S. students
- Chairing 3 Ph.D. students
- Since 1994 successfully supervised 52 M.S. and two PhD thesis in the Czech Republic and Mexico
- Co-advised numerous MS and PhD thesis at various universities in the Czech Republic, Mexico, Netherlands, Slovakia, and USA

Grants:

- 2017-2020, National Science Foundation, (Co-PI) MRI: *Development of a 3-D Printer for Polymer Structure and Polymer Computation – Purdue PolymerMakers*
- 2017-2018, National Science Foundation, (PI) # 1608762, *EAGER: Collaborative Research: Inverse Procedural Material Modeling for Battery Design*
- 2016-2019, Department of Energy (Co-PI) *Solution for Predictive Physical Modeling in CDTE and Other Thin-Film PV Technologies,*
- 2016-2019 NSF (Co-PI) *CDS&E: Enabling Time-critical Decision-support for Disaster Response and Structural Engineering through Automated Visual Data Analytics*
- 2016-2019 NSF (Co-PI) *Haptic-Based Learning Experiences as Cognitive Mediators for Conceptual Understanding and Representational Competence in Engineering Education*
- 2015 Unrestricted Gift Adobe Research, *Procedural Modeling*
- 2014-15 Laboratory & University Core Facility Research Equipment Program, *Optimizations for Additive Manufacturing, Advancing Purdue's Research Enterprise*
- 2014 Unrestricted Gift Intel, *Development of Enhancing Computer Graphics Education with Many Integrated Core Computing*
- 2013 Unrestricted Gift Crown Columns, *3D columns modeling*
- 2012-2013 *Tomographic data reconstruction,* Ford, Inc.
- 2012-2013 *Software Analysis for 3D Printing,* Siemens, Inc.
- 2011-2013 *Integrating Spatial Educational Experiences (Isee) – Mapping a New Approach to Teaching and Learning Soil Science (USDA-HECG) (Co-PI),*
- 2011 OVPR Bridge Funding for HCC CGV Small Collaborative Research: *Haptic Rendering & Visual Simulation to Improve Understanding of Complex Physical Processes (Purdue University)*
- 2010-2013 Metropolitan Transportation Commission, *Urban Simulation Visualization*
- 2010-2013 NSF IIS, *Integrating Behavioral, Geometrical and Graphical Modeling to Simulate and Visualize Urban Areas, (CO-PI),*
- 2007-2011 NASA, *A Global High-Resolution Fossil Fuel CO2 Inventory Built from assimilation of in Situ and Remotely-Sensed Datasets to Advance Satellite Greenhouse Gas Detection Support Systems, (CO-PI)*
- 2007 GPUMASS: *A GPGPU-based Analytic Tool for Mass Spectrometry Data Analysis, Purdue Discovery Park Seed Grant*
- 2008 Unrestricted Gift Adobe Research, *Vector Pattern Modeling and Editing,*

- 2008 *Integrating Spatial Education Experience (ISee) into Crop, Soil, and Environmental Science Curricula* (USDA-HECG),
- 2007 Summer Research Grant – *A Visual Analytics Tool for of Protein Biomarkers Cancer Detection*

Books and Chapters in Books

Stava, O., and Benes, B., Connected Component Labeling in CUDA, Chapter in GPU Computing Gems, 2010

Stava, O., Benes, B., and Krivanek, J., Interactive Erosion Simulation on the Graphical Processing Unit, Chapter in ShaderX7 advanced rendering techniques book, Charles River Media 2009

Žára, J. – Beneš, B.- Sochor, J. - Felkel,P., *Modern Computer Graphics 2nd edition*, Computer Press 2004

Žára, J. – Beneš, B.- Felkel,P., *Modern Computer Graphics*, Computer Press 1998

Žára, J. – Beneš, B.- Limpouch, T. – Werner, T., *Computer Graphics - Principles and Algorithms*, Grada 1992

Journal publications

Guérin, E., Digne, J., Galin, E., Peytavie, A., Wolf, C., Benes, B., and Martinez, B., (2017). *Interactive Example-Based Terrain Authoring with Conditional Generative Adversarial Networks* in ACM Transactions on Graphics (Siggraph Asia)

Abdul-Massih, M., Yoo, I., and Benes, B., (2017). *Motion Style Retargeting to Characters with Different Morphologies* in Computer Graphics Forum, 36(6), pp:86-99

Vojtech Krs, Ersin Yumer, Nathan Carr, Bedrich Benes, and Radomir Mech (2017) *Skipppy: Single View 3D Curve Interactive Modeling* in ACM Transactions on Graphics 36(4)

Guillaume Cordonnier, Eric Galin, James Gain, Bedrich Benes, Eric Guerin, Adrien Peytavie and Marie-Paule Cani (2017) *A Flexible Framework for Landscape Editing, Combining Vegetation and Terrain Erosion* in ACM Transactions on Graphics 36(4)

Guillaume Cordonnier, Marie-Paule Cani, Bedrich Benes, Jean Braun, and Eric Galin (2017) *Interactive Terrain Modeling based on Subsurface Geology* in IEEE Transactions on Visualization and Computer Graphics

Pirk, S., Krs, V., Hu, K., Deepak, S.R., Kang, H., Benes, B., Yoshiyasu, Y., and Guibas, L. J. (2017) *Understanding and Exploiting Object Interaction Landscapes* in ACM Transactions on Graphics 36(3)

Hädrich, T., Benes, B., Deussen, O., and Pirk, S (2017) *Interactive Modeling and Authoring of Climbing Plants* in Computer Graphics Forum (Eurographics 2017) Best Paper Awards – honorable mention

Fišer, M., Ravi, J., Benes, B., Shi, B., and Hirst, P (2017) *IMapple: a source-sink developmental model for 'Golden Delicious' apple trees* in Acta Horticulturae 1160, 51-60

Shaikh, U., Magana, A., Neri, L., Escobar-Castillejos, D., Noguez J., and Benes B., (2017) *Undergraduate students' conceptual interpretation and perceptions of haptic-enabled learning experiences* in International Journal of Educational Technology in Higher Education

Magana, A., Sanchez, K. L., Shakik, U. A. S., Jones, G. M., Tan, H. Z., Guayaquil, A., and Benes, B., (2017) *Exploring Multimedia Principles for Supporting Conceptual Learning of Electricity and Magnetism with Visuohaptic Simulations* in Computers in Education Journa

Hu, K, Yan, D., Bommers, B., Alliez, P., and Benes, B., (2016) *Error-Bounded and Feature Preserving Surface Remeshing with Minimal Angle Improvement* in IEEE Transactions on Visualization and Computer Graphics

Nishida, G., Garcia-Dorado, I., Aliaga, D.G., Benes, B., and Bousseau, A., (2016) *Interactive Sketching of Urban Procedural Models* in ACM Transactions on Graphics (Siggraph 2016)

Zhao, H., Gu, F., Huang, Q., Gacia Galicia, J.A., Chen, Y., Tu, C., Benes, B., Zhang, H., Cohen-Or, D., and Chen, B. (2016) *Connected Fermat Spirals for Layered Fabrication* in ACM Transactions on Graphics (Siggraph 2016)

Kim, H.; Dorantes, M. J.; Schulze, D. G. and Benes, B. (2016) *Computer Graphics Procedural Modeling of Soil Structure* in Digital Soil Morphometrics Springer International Publishing, 133-144

- Moore, B. A.; Yoo, I.; Tyrrell, L. P.; Benes, B. & Fernandez-Juricic, E. (2016) *FOVEA: A new program to standardize the measurement of foveal pit morphology* PeerJ, 2016, 4, e1785
- Abdul-Massih, M., Yoo, I., and Benes, B., (2016). *Motion Style Retargeting to Characters with Different Morphologies* in Computer Graphics Forum, DOI: 10.1111/cgf.12860
- Escobar-Castillejos, D., Noguez, J., Neri, L., Magana, A., and Benes, B., (2016). *A Review of Simulators with Haptic Devices for Medical Training* in Journal of Medical Systems 40(4), pp 1-22
- Cordonnier, G., Braun, J., Cani, M.P., Benes, B., Galin, E., Peytavie, A., and Guerin, E., (2016). *Large Scale Terrain Generation from Uplift and Erosion* in Computer Graphics Forum (Eurographics 2016) (In Press)
- Fiser, M., B. Shi, J. Ravi, P. Hirst and Benes, B. (2016). *IMapple: a source-sink developmental model for Golden Delicious apple trees*. in Acta Horticultuturæ (In Press)
- Demir, I., Aliaga, D.G., and Benes, B., (2015). *Procedural Editing of Building Point Clouds*. International Conference on Computer Vision
- Zhuo, H., Zhou, S., Benes, B., and Whittinghill, D., (2015). *User-assisted Inverse Procedural Facade Modeling and Compressed Image Rendering*. International Symposium on Visual Computing - ISVC 2015
- Chen, X., Zhang, H., Lin, J., Hu, R., Lu, L., Huang, Q., Benes, B., Cohen-Or, D., and Chen B., (2015). *Dapper: Decompose-and-Pack for 3D Printing*. Siggraph Asia 2015
- Neri, L., Escobar-Castillejos, D., Noguez, J., Shaikh, U.A.S., Magana, A.J., and Benes, B. (2015). *Improving the learning of physics concepts using haptic devices*. Proceedings of the 45th Annual Frontiers in Education (FIE) Conference. El Paso, Texas. October 21-24, 2015.
- Grosbellet, F., Peytavie, A., Guerin, E., Galin, E., Merillou, S., and Benes, B., (2015) *Environmental Objects for Authoring Procedural Scenes*. in Computer Graphics Forum
- Emilien, A., Vimont, U., Cani, M.P., Poulin, P., and Benes, B., (2015) *WorldBrush: Interactive Example-based Synthesis of Procedural Virtual Worlds* in ACM Trans. Graph (Proceedings of Siggraph 2015)
- Demir, I., Aliaga, D. G., and Benes, B., (2015) *Coupled Segmentation and Similarity Detection on Architectural Models* in ACM Trans. Graph (Proceedings of Siggraph 2015)
- Skorkovska, V., Kolingerova, I., and Benes, B., (2015) *Hydraulic Erosion Modeling on a Triangular Mesh*, in Surface Models for Geosciences Lecture Notes in Geoinformation and Cartography, 237-247
- Génevaux, J.D., Galin, E., Peytavie, A., Guérin, E., Briquet, C., Grosbellet, F., and Benes, B., (2015), *Terrain Modeling from Feature Primitives* in Computer Graphics Forum
- Kratt, J, Spicker, M., Guayaquil, A., Fiser, M., Pirk, S., Deussen, O., Hart, J.C., and Benes, B., (2015) *Woodification: User-Controlled Cambial Growth Modeling* in Computer Graphics Forum (Proceedings of Eurographics 2015)
- Yoo, I., Abdul-Massih, M., Ziamtsov, I., Hassan, R., and Benes, B., (2015) *Motion Retiming by using Bilateral Time Control Surfaces*, in Computers & Graphics 47, 59-67
- Pirk, S., Niese, T., Hadrach, T., Benes, B., and Deussen O., (2014) *Windy Trees: Computing Stress Response for Developmental Tree Models*, ACM Transactions on Graphics (Siggraph Asia)
- Vanek, J., Garcia, J., and Benes, B., (2014) *Clever Support: Efficient Support Structure Generation for Digital Fabrication*, in Computer Graphics Forum Vol 33(5)
- Vanek, J., Garcia, J., Benes, B., Mech, R., Carr, N., Stava, O., and Miller, G (2014) *Pack Merger: A 3D Print Volume Optimizer*, in Computer Graphics Forum, Vol 33(6), pp: 322-332
- Zhou, S., Yoo, I., Benes, B., and Chen, G. (2014), *A Hybrid Level of Detail Representation for Large-Scale Urban Scenes Rendering*, in the Journal Computer Animation and Virtual Worlds 25(3-4), pp. 245—255
- Popescu, V., Benes, B., Rosen, P., Cui, J., and Wang, L. (2014), *A Flexible Pinhole Camera Model for Coherent Non-Uniform Sampling*, in Computer Graphics & Applications 34(4), pp. 30-41

- Stava, O., Pirk, S., Kratt, J., Chen, B., Mech, R., Deussen, O., and Benes, B., (2014) Inverse Procedural Modeling of Trees , in Computer Graphics Forum, Vol 33(6), pp. 118-131
- Benes, B., & Aliaga, D. (2014). Foreword to Special Section on Advances in Procedural Modeling. Computers & Graphics.
- Yoo, I., Vanek, J., Nizotseva, M., Adamo-Villani, N., & Benes, B. (2014). Sketching human character animations by composing sequences from large motion database in the visual computer. *The Visual Computer*, 30(2), 212-227
- Smelik, R. M., Tutenel, T., Bidarra, R., and Benes, B. (2014) A Survey on Procedural Modelling for Virtual Worlds, in Computer Graphics Forum, Vol 33(6), pp. 31-50
- Genevaux, J-P., Galin, E., Guerin, E., Peytave, A., & Benes, B. (2013). Terrain generation using procedural models based on hydrology. *ACM Transactions on Graphics (TOG) – SIGGRAPH 2013 Conference Proceedings*, 32(4), 143:1-143:10
- Bojrab, M., Massih M-A., & Benes, B. (2013). Perceptual importance of lighting phenomena in rendering of animated water. *ACM Transactions on Applied Perceptions (TAP)*, 10(1), 2:1-2:18.
- Vanegas, C. A., Garcia-Dorado, I., Aliaga, D., Benes, B., and Waddell, P., (2012) Inverse Design of Urban Procedural Models, in *ACM Transactions on Graphics (TOG)* 28 (5), 111
- Gurney, K., Razlivanov, I., Song, Y., Zhou, Y., Benes, B., and Abdul-Massih, M., (2012) Quantification of fossil fuel CO_2 emissions at the building/street scale for a large US city in *Environmental Science & Technology* 46(21), pp. 12194–12202
- Stava, O., Vanek, J., Benes, B., Carr, N., and Mech, R., (2012). Stress relief: improving structural strength of 3D printable objects. *ACM Trans. Graph.* 31, 4, Article 48, 11 pages.
- Pirk, S., Stava, O., Kratt, J.U., Said, M.A., Neubert, B., Měch, R., Benes, B., and Deussen, O., (2012). Plastic trees: interactive self-adapting botanical tree models. *ACM Trans. Graph.* 31, 4, Article 50, 10 pages.
- Vanegas, C., Aliaga, D., and Benes, B., (2012) Automatic Extraction of Manhattan-World Building Masses from 3D Laser Range Scans, *IEEE Transactions on Visualization and Computer Graphics* 18 (10), 1627-1637
- Vanek, J., Benes, B., Herout, A., and Stava, O., Large-Scale Physics-Based Terrain Editing Using Adaptive Tiles on the GPU (2011), *IEEE Computer Graphics and Applications* November/December 2011, Vol 31, No 6, pp.:35-44
- Peytave, A., Galin, E., Guerin, E., and Benes, B., Authoring Hierarchical Road Networks in *Computer Graphics Forum* (2011), 30(7), 2021-2030.
- Liang, Z., Wildeson, I., Colby, R., Ewoldt, R., Zhang, T., Sands, T. D., Stach, E., Benes, B., and Garcia, E., (2011) Built-In Electric Field Minimization in (In,Ga)N Nanoheterostructure in *NANO Letters*
- Benes, B., Stava, O., Mech, R., and Miller, G., (2011) Guided Procedural Modeling, *Computer Graphics Forum*, 325-334.
- Vanegas, C., Aliaga, D., & Beneš, B., (2010) Building Reconstruction using Manhattan-World Grammars, *Proceedings of IEEE Conference on Computer Vision and Pattern Recognition*, 358-365
- Vanegas, C., Aliaga, D., Beneš, B., & Waddell, P., (2009) Interactive Designing and Editing of Urban Spaces using Geometric and Behavioral Modeling, *ACM Trans. Graph.* 28(5) pp:1-10
- Stava, O., Beneš, B., Mech, R., Aliaga, D., & Kristof, P., (2010) Inverse Procedural Modeling by Automatic Generation of L-systems, *Computer Graphics Forum* 29 (2), 665-674
- Malkova, M., Parus, J., Kolingerova, I., & Benes, B. (2010) An intuitive polygon morphing, *The Visual Computer* 26 (3), 205-215
- Kristof, P., Benes, B., Krivanek, J., & Stava, O. (2009) Hydraulic Erosion Using Smoothed Particle Hydrodynamics, *Computer Graphics Forum*, Vol. 28, No. 2.
- Andryscio, N., Gurney, K. R., Benes, B., & Corbin, K. (2009) Visual Exploration of the Vulcan CO_2 Data, *IEEE Computer Graphics & Applications*, Vol. 29, No. 1. pp. 6-11.

Vanegas, C., Aliaga, D. G., Benes, B., & Waddell, P. (2009) Visualization of Simulated Urban Spaces: Inferring Parameterized Generation of Streets, Parcels, and Aerial Imagery, IEEE Transactions on Visualization and Computer Graphics, Vol. 15, no. 2, pp. 424-435.

Aliaga, D. G., Vanegas, C., & Benes, B. (2008) Interactive Example-Based Urban Layout Synthesis, ACM Transactions on Graphics, Vol. 27, No. 5, pp. 1:106-10:106

Aliaga, D. G., Benes, B., & Vanegas, C. (2008) Interactive Reconfiguration of Urban Layouts, IEEE Computer Graphics & Applications, Vol. 28, No. 3, pp. 38-47

Hartman, C., & Benes, B. (2006) Autonomous Boids, Computer Animation and Virtual Worlds, 17(3-4), pp. 199-206

Benes, B., Tesinsky, V., Hornys, J., & Bhatia, S. K. (2006) Hydraulic Erosion, Computer Animation and Virtual Worlds, 17(2), pp. 99-108

Benes, B., & Soto, J.M, Cordoba, A. (2003) Interacting Agents with Memory in Virtual Ecosystems, In the Journal of WSCG 2003, I (11), pp. 49-56

Benes, B., & Forsbach, R. (2002). Visual Simulation of Hydraulic Erosion, In the Journal of WSCG 2002, pp. 79-86

Benes, B., & Espinosa E. (2001). Using Particles for 3D Texture Sculpting, In The Journal of Visualization and Computer Animation 12, pp. 191-201

Refereed conference papers

Patil, S., Lee, T., Ramalingam, S., Taguchi, Y., and Benes, B., (2017). *Barcode: Global Binary Patterns for Fast Visual Inference* in International Conference on 3D Vision

Yeum, C. M., Dyke, S. J., Benes, B., Hacker, T., Ramirez, J., Lund, A., and Pujol, S., (2017) *Rapid, Automated Post-Event Image Classification and Documentation* in 7 AESE International Conference on Experimental Structural Engineering

Fiser, M., Benes, B., Garcia-Galicia, J., Abdul-Massih, M., Aliaga, D.G., and Krs, V., (2016) Learning Geometric Graph Grammars in SCCG 2016

Kang, H., Fiser, M., Shi, B., Sheibani, F., Hirst, P., and Benes, B., (2016) IMapple - Functional Structural Model of Apple Trees in IEEE International Conference on Functional-Structural Plant Growth Modeling, Simulation, Visualization and Applications

Magana, A., Sanchez, K. L., Shakik, U. A. S., Jones, G. M., Tan, H. Z., Guayaquil, A., and Benes, B., (2016) Exploring Multimedia Principles for Supporting Conceptual Learning of Electricity and Magnetism with Visuohaptic Simulations in Computers in Education Journal

Demir, I., Aliaga, D. G., and Benes, B., (2014) Proceduralization at City Scale, in International Conference on 3D Vision

Gazo, R., Vanek, J., Massih, M-A., Haviarova, E., & Benes, B. (in press). An efficient pith detection for computer tomography scanned logs using CUDA. Paper presentation at the International IUFRO Conference: MeMo Wood – Measurement methods and modeling approaches for predicting desirable future wood properties, Nancy, France.

Gazo, R., & Benes, B. (2013). Computed tomography log scanning: An industrial application. In S. Berti (Chair), Proceedings of ISCHP 2013 – 4th International Scientific Conference on Hardwood Processing (pp. 140-147).

Kristof, P., Benes, B., Song, X.C., & Zhao, L. A. (2013). A system for large-scale visualization of streaming Doppler data. In X. Hu, T. Y. Lin, V. Raghaven, B. W. Wah, R. A. Baeza-Yates, G. Fox, C. Shahabi, M. Smith, R. Ghani, W. Fan, R. Lempel & R. Nambiar (Eds.), BigData Conference (pp. 33-40). IEEE

Andryscio, N., Rosen, P., Popescu, V., Benes, B., and Gurney, K., (2011) Experiences in Disseminating Educational Visualizations, Advances in Visual Computing, 239-248

Massih, M. A., Benes, B., Zhang, T., Platzer, C., Leavenworth, W., Garcia, R.E., and Zhiwen, L., (2011) Augmenting Heteronanostructure Visualization with Haptic Feedback Advances in Visual Computing, 627-636

Magana, A., Benes, B., A Guided Inquiry-Based Learning Approach to High Performance Computer Graphics Education, (2011) Proceedings of Annual Conference of American Society for Engineering Education

- Benes, B., Massih, M-A., Jarvis, P., Aliaga, D.G., and Vanegas, C., (2011) Urban Ecosystem Design, in ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (I3D) 2011, pp: 167-174
- Benes, B., Andryscio, N., & Stava, O. (2009) Interactive Modeling of Virtual Ecosystems, Eurographics Workshop on Natural Phenomena. pp: 9-16
- Benes, B. Hydraulic Erosion: A Survey, (2009) Spring Conference on Computer Graphics
- Stava, O., Benes, B., Brisbin, M., & Krivanek, J. (2008). Interactive Terrain Modeling Using Hydraulic Erosion, Eurographics/SIGGRAPH Symposium on Computer Animation, pp. 201-210.
- Sundaram, V., Ru, Y., Benes, B., Zhao, L., Song, X. C., Park, T., Bertoline, G., & Huber, M. (2008) System for Near Real-Time 3D Visualization of NEXRAD Level II Data Using TeraGrid, TeraGrid 2008 Conference, pp. 9-13.
- Benes, B. (2007) Hydraulic Erosion Using Shallow-Water Equation Simulation, Workshop on Virtual Reality Interactions and Physical Simulation, Eurographics, pp. 43-50.
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