

CURRICULUM VITAE

of
Shigeo Takahashi
in January, 2011



CONTACT INFORMATION:

Name: Shigeo Takahashi

Professional position:

Associate Professor
Department of Complexity Science and Engineering
Graduate School of Frontier Sciences
The University of Tokyo

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PERSONAL INFORMATION:

Date of Birth: December 20, 1968

Place of Birth: Nagasaki, Japan

Citizenship: Japan

Sex: Male

Home Address:

1-28-7 Nishihara, Kashiwa
Chiba, 277-0885 Japan
Phone: +81-4-7100-1135

PROFESSIONAL EXPERIENCE:

April, 2005 – present

Associate Professor

Department of Complexity Science and Engineering

Graduate School of Frontier Sciences, and

Adjunct Associate Professor

Department of Computer Science,

Graduate School of Information Science and Technology

The University of Tokyo, Japan

October, 2002 – September, 2003

Visiting Associate Professor of

Department of Computer Science and Engineering

Arizona State University, AZ, U.S.A.

April, 2001 – March, 2005

Associate Professor

Department of Graphics and Computer Science

Graduate School of Arts and Sciences

The University of Tokyo, Japan

July, 1999 – March, 2001

Associate Professor

Computer Center,

Gunma University, Japan

April, 1997 – July, 1999

Assistant Professor

Department of Computer Science

Faculty of Engineering

Gunma University, Japan

EDUCATIONAL BACKGROUND:

March 1997

Received Ph.D in computer science

from the University of Tokyo

April 1994 – March 1997

Ph.D. course graduate student

Department of Information Science

Graduate School of Science

The University of Tokyo

April 1992 – March 1994

Master course graduate student
Department of Information Science
Graduate School of Science
The University of Tokyo

April 1988 – March 1992

Undergraduate student
Department of Information Science
Faculty of Science
The University of Tokyo

AWARDS:

- June, 1997: EDM award (2nd best paper by a young scientist),
Computer Graphics International 1997
given by Computer Graphics Society
(with Yoshihisa Shinagawa and Tosiyasu L. Kunii)
- January, 2007: Most cited paper award for the international journal
Graphical Models (2004-2006) given by the publisher “Elsevier” for the article
“Topological Volume Skeletonization and its Application to Transfer Function
Design,”
(with Yuriko Takeshima and Issei Fujishiro)
- April, 2009: 1st BEST SCCG 2009 Presentation Award
given by the 25th Spring Conference on Computer Graphics (SCCG2009)
(with Sho Kurose)

RESEARCH INTERESTS:

- Scientific Visualization
- Visual Perception Modeling
- Shape Modeling
- Geographical Information Systems

PROFESSIONAL MEMBERSHIPS:

- December 1992 – present:
Information Processing Society of Japan (IPSJ)
- September 1992 – present:
Association of Computer Machinery (ACM)
- September 1994 – present:
Institute of Electrical and Electronics Engineers (IEEE)
- September 1997 – present:
The Institute of Electronics, Information and Communication Engineers, Japan (IEICE)
- January 2002 – present:
Eurographics
- April 2005 - present:
Visualization Society of Japan
- April 2006 - present:
Vision Society of Japan

SOCIAL ACTIVITIES:

- Editorial Board
 - IEICE Transactions (Engineering Sciences Society)
April, 2006 – March, 2010
- International Program Committee Member
 - Vis: IEEE Visualization (2005–2007, 2010)
 - EuroVis: Eurographics/IEEE Symposium on Visualization (2009, 2011)
 - PacificVis: IEEE Pacific Visualization Symposium (PacificVis) (2008–2011)
 - VG: International Workshop on Volume Graphics (2003,2006–2008)
 - PG: Pacific Graphics (2001,2008–2011)
 - SG: International Symposium on Smart Graphics (2007–2011)
 - IVAPP: International Conference on Information Visualization Theory and Applications (2011)
 - GMP: Geometric Modeling and Processing (2006,2008)
 - SMI: IEEE Shape Modeling International (2006,2007)
 - CAD/Graphics (2007)
 - CGV: IADIS Multi Conference on Computer Science and Information Systems (2008–2010)
 - APSIPA Annual Summit and Conference (2009)

Journal Papers

- [1] Eunjung Ju, Myung Geol Choi, Minji Park, Jehee Lee, Kang Hoon Lee, and Shigeo Takahashi. Morphable Crowds. *ACM Transactions on Graphics*, Vol. 29, No. 5, 2010. Article No. 140.
- [2] Tatsuhiko Suzuki, Shigeo Takahashi, and Jason Shepherd. An Interior Surface Generation Method for All-Hexahedral Meshing. *Engineering with Computers*, Vol. 26, No. 3, pp. 303–316, 2010.
- [3] Shigeo Takahashi, Issei Fujishiro, and Msato Okada. Applying Manifold Learning to Plotting Approximate Contour Trees. *IEEE Transactions on Visualization and Computer Graphics*, Vol. 15, No. 6, pp. 1185–1192, 2009.
- [4] Fernando J. Wong and Shigeo Takahashi. Flow-Based Automatic Generation of Hybrid Picture Mazes. *Computer Graphics Forum*, Vol. 28, No. 7, pp. 1975–1984, 2009.
- [5] Shigeo Takahashi, Kenichi Yoshida, Taesoo Kwon, Kang Hoon Lee, Jehee Lee, and Sung Yong Shin. Spectral-Based Group Formation Control. *Computer Graphics Forum*, Vol. 28, No. 2, pp. 639–648, 2009.
- [6] Taesoo Kwon, Kang Hoon Lee, Jehee Lee, and Shigeo Takahashi. Group Motion Editing. *ACM Transactions on Graphics*, Vol. 27, No. 3, 2008. Article No. 80.
- [7] Shigeo Takahashi, Kenichi Yoshida, Kenji Shimada, and Tomoyuki Nishita. Occlusion-Free Animation of Driving Routes for Car Navigation Systems. *IEEE Transactions on Visualization and Computer Graphics*, Vol. 12, No. 5, pp. 1141–1148, 2006.
- [8] Shigeo Takahashi, Yuriko Takeshima, and Issei Fujishiro. Topological Volume Skeletonization and Its Application to Transfer Function Design. *Graphical Models*, Vol. 66, No. 1, pp. 22–49, 2004. [Received the Elsevier Most Cited Paper Award for the Journal Graphical Models (2004–2006)].
- [9] Shigeo Takahashi, Naoya Ohta, Hiroko Nakamura, Yuriko Takeshima, and Issei Fujishiro. Modeling Surperspective Projection of Landscapes for Geographical Guide-Map Generation. *Computer Graphics Forum*, Vol. 21, No. 3, 2002.
- [10] Ryutarou Ohbuchi, Akio Mukaiyama, and Shigeo Takahashi. A Frequency-Domain Approach to Watermarking 3D Shapes. *Computer Graphics Forum*, Vol. 21, No. 3, 2002.
- [11] Ryutarou Ohbuchi, Yoshiyuki Kokojima, and Shigeo Takahashi. Blending Shapes by Using Subdivision Surfaces. *Computers and Graphics*, Vol. 25, No. 1, pp. 41–58, 2001.
- [12] Issei Fujishiro, Taeko Azuma, Yuriko Takeshima, and Shigeo Takahashi. Volume Data Mining Using 3D Field Topology Analysis. *IEEE Computer Graphics and Applications*, Vol. 20, No. 5, pp. 46–51, 2000.
- [13] Shigeo Takahashi. Tolerance Constraints for Variational Design of Multiresolution Curves and Surfaces. *International Journal of Shape Modeling*, Vol. 6, No. 1, pp. 37–63, 2000.
- [14] Shigeo Takahashi, Yoshihisa Shinagawa, and Tosiyasu L. Kunii. Continuous-resolution-level Constraints in Variational Design of Multiresolution Shapes. *The Visual Computer*, Vol. 14, No. 4, pp. 177–192, 1998.

- [15] Shigeo Takahashi. Variational Design of Curves and Surfaces Using Multiresolution Constraints. *The Visual Computer*, Vol. 14, No. 5/6, pp. 208–227, 1998.
- [16] Shigeo Takahashi, Tetsuya Ikeda, Yoshihisa Shinagawa, Toshiyasu L. Kunii, and Minoru Ueda. Algorithms for Extracting Correct Critical Points and Constructing Topological Graphs from Discrete Geographical Elevation Data. *Computer Graphics Forum*, Vol. 14, No. 3, pp. 181–192, 1995.
- [17] Shigeo Takahashi and Toshiyasu L. Kunii. Manifold-based Multiple-viewpoint CAD: A Case Study of Mountain Guide-map Generation. *Computer-Aided Design*, Vol. 26, No. 8, pp. 622–631, 1994.

Conference Papers

- [1] Chongke Bi, Shigeo Takahashi, and Issei Fujishiro. Interpolating 3D Diffusion Tensors in 2D Planar Domain by Locating Degenerate Lines. In *Proceedings of the 6th International Symposium on Visual Computing (ISVC2010)*, pp. 328–337, 2010.
- [2] Jun Kobayashi, Chongke Bi, and Shigeo Takahashi. Sophisticated Construction and Search of 2D Motion Graphs for Synthesizing Videos. In *Proceedings of the 4th Pacific-Rim Symposium on Image and Video Technology (PSIVT2010)*, pp. 487–494, 2010.
- [3] Shinichi Nakazawa, Sho Kasahara, and Shigeo Takahashi. A Visually-Enhanced Approach to Watermarking 3D Models. In *Proceedings of the 6th International Conference on Intelligent Information Hiding and Multimedia Signal Processing (IIH-MSP 2010)*, pp. 110–113, 2010.
- [4] Kenichi Yoshida, Shigeo Takahashi, Hiroaki Ono, Issei Fujishiro, and Masato Okada. Perceptually-Guided Design of Nonperspectives Through Pictorial Depth Cues. In *Proceedings of 7th International Conference on Computer Graphics, Imaging and Visualization (CGiV2010)*, pp. 173–178, 2010.
- [5] Kairi Mashio, Kenichi Yoshida, Shigeo Takahashi, and Masato Okada. Automatic Blending of Multiple Perspective Views for Aesthetic Composition. In *Proceedings of the 10th International Symposium on Smart Graphics (Smart Graphics 2010)*, volume 6133 of *Springer Lecture Notes in Computer Science*, pp. 220–231, 2010.
- [6] Zhaolin Su and Shigeo Takahashi. Real-Time Enhancement of Image and Video Saliency using Semantic Depth of Field. In *Proceedings of International Conference on Computer Vision Theory and Applications (VISAPP 2010)*, pp. 370–375, 2010.
- [7] Shigeo Takahashi, Jun Kobayashi, and Issei Fujishiro. Feature-Driven Volume Fairing. In *Proceedings of Smart Graphics 2009*, volume 5531 of *Springer Lecture Notes in Computer Science*, pp. 233–242, 2009.
- [8] Sho Kurose and Shigeo Takahashi. Constraint-Based Simulation of Interactions between Fluids and Unconstrained Rigid Bodies. In *Proceedings of the 25th Spring Conference on Computer Graphics*, pp. 197–204, 2009. [Received 1st BEST SCCG 2009 Presentation Award].
- [9] Issei Fujishiro, Rieko Otsuka, Shigeo Takahashi, and Yuriko Takeshima. T-Map: A Topological Approach to Visual Exploration of Time-Varying Volume Data. In *Proceedings of the 6th International Symposium on High-Performance Computing 2005 (ISHPC2005)*, volume 4759 of *Springer Lecture Notes in Computer Science*, pp. 177–190, 2008.
- [10] Shigeo Takahashi, Yuriko Takeshima, Issei Fujishiro, and Gregory M. Nielson. Emphasizing Isosurface Embeddings in Direct Volume Rendering. In G.-P. Bonneau, T. Ertl, and G. M. Nielson, editors, *Scientific Visualization: The Visual Extraction of Knowledge from Data*, pp. 185–206. Springer, 2005.
- [11] Shigeo Takahashi, Issei Fujishiro, Yuriko Takeshima, and Tomoyuki Nishita. A Feature-Driven Approach to Locating Optimal Viewpoints for Volume Visualization. In *Proceedings of IEEE Visualization 2005*, pp. 495–502, 2005.
- [12] Tatsuhiko Suzuki, Shigeo Takahashi, and Jason Shepherd. An Interior Surface Generation Method for All-Hexahedral Meshing. In *Proceedings of the 14th International Meshing Roundtable*, pp. 377–398. Springer, 2005.

- [13] Yuki Mori, Shigeo Takahashi, Takeo Igarashi, Yuriko Takeshima, and Issei Fujishiro. Automatic Cross-Sectioning Based on Topological Volume Skeletonization. In *Proceedings of Smart Graphics 2005*, volume 3638 of *Springer Lecture Notes in Computer Science*, pp. 137–145, 236. Springer, 2005.
- [14] Yuriko Takeshima, Shigeo Takahashi, Issei Fujishiro, and Gregory M. Nielson. Introducing Topological Attributes for Objective-Based Visualization of Simulated Datasets. In *Proceedings of Volume Graphics 2005*, pp. 137–145, 236, 2005.
- [15] Shigeo Takahashi, Issei Fujishiro, and Yuriko Takeshima. Interval Volume Decomposer: A Topological Approach to Volume Traversal. In *Proceedings of SPIE Conference on Visualization and Data Analysis 2005*, volume 5669, pp. 103–114, 2005.
- [16] Ryutarou Ohbuchi, Akio Mukaiyama, and Shigeo Takahashi. Watermarking a 3D Shape Model Defined as a Point Set. In *Proceedings of Cyber Worlds 2004 (CW2004)*, pp. 392–399, Nov. 2004.
- [17] Shigeo Takahashi, Gregory M. Nielson, Yuriko Takeshima, and Issei Fujishiro. Topological Volume Skeletonization Using Adaptive Tetrahedralization. In *Proceedings of Geometric Modeling and Processing 2004 (GMP2004)*, pp. 227–236, 2004.
- [18] Yasuko Suzuki, Momoe Tokunaga, Shoko Ando, Shigeru Muraki, Yuriko Takeshima, Shigeo Takahashi, and Issei Fujishiro. Real-time Rendering of Attributed LIC-Volumes using Programmable GPUs. In *DVD Proceedings of IEEE Super Computing 2003*, 2003.
- [19] Yuriko Takeshima, Haruo Terasaka, Sensuke Shimizu, Shigeo Takahashi, and Issei Fujishiro. Applying Volume-Topology-Based Control of Visualization Parameters to Fluid Data. In *CD-ROM Proceedings of the 4th Pacific Symposium on Flow Visualization and Image Processing*, 2003.
- [20] Issei Fujishiro, Yuriko Takeshima, Shigeo Takahashi, and Yumi Yamaguchi. Topologically-Accentuated Volume Rendering. In F. H. Post, G. M. Nielson, and G.-P. Bonneau, editors, *Data Visualization: The State of the Art*, pp. 95–108. Kluwer Academic Publishers, 2003.
- [21] Shigeo Takahashi, Yoshiyuki Kokojima, and Ryutarou Ohbuchi. Explicit Controls of Topological Transitions in Morphing Shape of 3D Meshes. In *Proceedings of Pacific Graphics 2001*, pp. 70–79, 2001.
- [22] Ryutarou Ohbuchi, Shigeo Takahashi, Takahiko Miyazawa, and Akio Mukaiyama. Watermarking 3D Polygonal Meshes in the Mesh Spectral Domain. In *Proceedings of Graphics Interface 2001*, pp. 9–17, 2001.
- [23] Shigeo Takahashi. Multiresolution Constraints for Designing Subdivision Surfaces via Local Smoothing. In *Proceedings of Pacific Graphics '99*, pp. 168–178, 1999.
- [24] Shigeo Takahashi. Geometric- and Parametric-Tolerance Constraints in Variational Design of Multiresolution Curves and Surfaces. In *Proceedings of Computer Graphics International '98*, pp. 688–698, 1998.
- [25] Shigeo Takahashi, Yoshihisa Shinagawa, and Toshiyasu L. Kunii. Curve and Surface Design Using Multiresolution Constraints. In *Proceedings of Computer Graphics International '97*, pp. 121–130, 1997. [Received EDM Award (2nd Best Paper Award for a young scientist)].
- [26] Shigeo Takahashi, Yoshihisa Shinagawa, and Toshiyasu L. Kunii. A Feature-based Approach for Smooth Surfaces. In *Proceedings of ACM 4th Symposium on Solid Modeling and Applications*, pp. 97–110, 1997.

- [27] Toshiyasu L. Kunii, Alexander G. Belyaev, Elena V. Anoshkina, Shigeo Takahashi, Runhe Huang, and Oleg G. Okunev. Hierarchic Shape Description via Singularity and Multiscaling. In *Proceedings of COMPSAC '94*, pp. 242–251, 1994.
- [28] Hitoshi Saji, Yoshihisa Shinagawa, Shigeo Takahashi, Hirohisa Hioki, and Toshiyasu L. Kunii. Measuring Three-dimensional Shapes of Human Faces by Incorporating Stereo Vision with Photometry Using Blending Functions. In *Fundamentals of Computer Graphics (Proceedings of Pacific Graphics '94)*, pp. 3–18, 1994.
- [29] Yoshihisa Shinagawa, Toshiyasu L. Kunii, Anatoly T. Fomenko, and Shigeo Takahashi. Coding of Object Surfaces Using Atoms. In L. Rosenblum et al., editors, *Scientific Visualization: Advances and Challenges*, pp. 309–322. Academic Press, 1993.
- [30] Toshiyasu L. Kunii and Shigeo Takahashi. Area Guide Map Modeling by CW-complexes and Manifolds. In B. Falcidieno and T. L. Kunii, editors, *Modeling in Computer Graphics (IFIP Series on Computer Graphics)*, pp. 5–20. Springer, 1993.
- [31] Toshiyasu L. Kunii, Yoshihisa Shinagawa, and Shigeo Takahashi. Algorithmic Animation of Constructing Surfaces from Cells. In *Creating and Animating the Virtual World (Proceedings of Computer Animation '92)*, pp. 191–198. Springer, 1992.

Book Chapters

- [1] S. Takahashi. Algorithms for Extracting Surface Topology from Digital Elevation Models. In S. Rana, editor, *Topological Data Structures for Surfaces*, Chapter 3, pp. 31–51. Wiley, 2004.
- [2] S. Takahashi. Orbital Invariant of Integrable Hamiltonian Systems. In A. T. Fomenko and T. L. Kunii, editors, *Topological Modeling for Visualization*, Chapter 17, pp. 349–374. Springer, 1997.