GMP2006

Geometric Modeling and Processing 2006

July 26 - 28, 2006

Pittsburgh, Pennsylvania, U.S.A.
Sheraton Station Square Hotel

Schedule-at-a-glance

	7/25 (Tue)	7/26 (Wed)	7/27 (Thr)	7/28 (Fri)	
7:00		* Conference Registration	* Continental Breakfast	* Continental Breakfast	7:00
		* Continental Breakfast			
8:00		Opening	Announcement	Announcement	8:00
		Keynote I Peter Schröder	Keynote II Christoph Hoffmann	Subdivision Surfaces (2 papers)	
9:00		Shape Reconstruction (3 papers)	Curves and Surfaces II (3 papers)	Geometric Modeling (3 papers)	9:00
10:00					10:00
		* Coffee and Tea Break	* Coffee and Tea Break	* Coffee and Tea Break	
		Curves and Surfaces I (3 papers)	Shape Deformation (3 papers)	Curves and Surfaces III (3 papers)	
11:00					11:00
12:00		Lunch	Lunch	Lunch	12:00
13:00					13:00
		Geometric Processing I (4 papers)	Shape Description (4 papers)	Geometric Processing II (2 papers)	
14:00					14:00
				Engineering Applications (3 papers)	
15:00					15:00
			Coffee and Tea Break	Closing	
			Shape Recognition (3 papers)		
16:00					16:00
		Bus ride from the hotel to Carnegie Mellon University			
17:00					17:00
18:00		Poster Session	Dinner Cruise		18:00
	* Conference Registration				
19:00		Reception	Award Ceremony		19:00
20:00					20:00
		Bus ride from Carnegie Mellon Univeristy to the hotel			
21:00					21:00

Note: the events marked with "*" will be held in REFLECTIONS room.
All the other event, unless it is specifically mentioned, will be held in GRAND STATION I room.

Keynote Speakers

Peter Schröder

Professor of Computer Science and Applied and Computational Mathematics. the California Institute of Technology

Peter Schröder is Professor of Computer Science and Applied and Computational Mathematics at the California Institute of Technology where he began his academic career in 1995. Prior to Caltech and a short stint as postdoctoral research fellow at Interval Corporation (summer 1995) he was a postdoctoral research fellow at the University of South Carolina department of mathematics and a lecturer in the computer science department, where he worked with Prof. Björn Jawerth and Dr. Wim Sweldens. He received his PhD in computer science from Princeton University in 1994 for work on "Wavelet Methods for Illumination Computations." Prior to Princeton he was a member of the technical staff at Thinking Machines, where he worked on graphics algorithms for massively parallel computers. In 1990 he received an MS degree from MIT's Media Lab. He did his undergraduate work at the Technical University of Berlin in computer science and pure mathematics. He has also held an appointment as a visiting researcher with the German national computer science research lab (GMD) and its visualization group.

Prof. Schröder is a world expert in the area of wavelet based methods for computer graphics. He helped pioneer the use of fast wavelet solvers for illumination computations and developed (with Dr. Sweldens) the first practical spherical wavelet transform. Multiresolution techniques have been the subject of many invited lectures and courses he has given in Europe and North America for academic and industrial audiences. His publications record ranges from WIRED magazine to Siggraph conferences and special scientific journal issues on wavelets. In 1995 he was awarded a NSF CAREER award and named a Sloan Fellow. More recently he was named a Packard Fellow and Finalist in the 2001 Discover Awards.

Christoph Hoffmann

Professor of Computer Science, Purdue University

Before joining the Purdue faculty, Professor Hoffmann taught at the University of Waterloo, Canada. He has been visiting professor at the Christian-Albrechts University in Kiel, West Germany (1980), and at Cornell University (1984-1986). His research focuses on geometric and solid modeling, its applications to manufacturing and science, and the simulation of physical systems. The research includes, in particular, research on geometric constraint solving, modeling biological structures, robustness in geometric computation, and the semantics of generative, feature-based design. Professor Hoffmann is the author of Group-Theoretic Algorithms and Graph Isomorphism, Lecture Notes in Computer Science, 136, Springer-Verlag and of Geometric and Solid Modeling: An Introduction, published by Morgan Kaufmann, Inc. Professor Hoffmann has received national media attention for his work simulating the 9/11 Pentagon attack.

Professor Hoffmann serves on the editorial boards of Computer-Aided Geometric Design, Computer Aided Design, ACM Transactions on Graphics, and on the editorial board of Computer-Aided Design and Applications. He is interim co-director of Purdue's Computing Research Institute and co-director of Purdue's Product Lifecycle Management Center of Excellence. He has organized numerous national and international workshops and conferences. The author of two monographs, he has published in diverse areas of computer science. His research has received continuous funding since 1978. He is the PI on Purdue's NSF Envision Center grant.

7/26 (Wed)

7:00-8:00	*** Continental Breakfast and Registration**	
8:00-8:10	**Opening Remarks**	*(Session Chair: Kenji Shimada)*

D. C. Gossard
Massachusetts Institute of Technology

8:10-9:00	**Keynote Speech**	*(Session Chair: Myung-Soo Kim)*

Discrete Differential Geometry for Modeling and Animation
P. Schröder
California Institute of Technology

9:00-10:15	**Shape Reconstruction**	*(Session Chair: Myung-Soo Kim)*

Automatic Extraction of Surface Structures in Digital Shape Reconstruction
T. Várady[1], M.-A. Facello[2], Z. Terék[1]
[1]Geomagic Hungary, Ltd., [2]Geomagic, Inc.

Ensembles for Normal and Surface Reconstructions
M. Yoon[1], Y. Lee[1], S. Lee[1], I. Ivrissimtzis[2], H.-P. Seidel[3]
[1]POSTECH, [2]Coventry University, [3]MPI Informatik

Adaptive Fourier-based Surface Reconstruction
O. Schall, A. Belyaev, H.-P. Seidel
Max-Planck-Institut für Informatik, Germany

10:15-10:45	*** Coffee and Tea Break**	
10:45-12:00	**Curves and Surfaces I**	*(Session Chair: Tamas Várady)*

Least-Squares Approximation by Pythagorean Hodograph Spline Curves via an Evolution Process
M. Aigner, Z. Šír, B. Jüttler (Johannes Kepler University, Austria)

Geometric Accuracy Analysis for Discrete Surface Approximation
J. Dai[1], W. Luo[1], S.-T. Yau[2], X.-D. Gu[3]
[1]Zhejiang University, [2]Harvard University, [3]Stony Brook University

Quadric Surface Extraction by Variational Shape Approximation
D.-M. Yan, Y. Liu, W. Wang
The University of Hong Kong

12:00-13:30	**Lunch Break (On your own -- please see the STATION SQUARE map for various restaurant options.)**	
13:30-15:10	**Geometric Processing I**	*(Session Chair: Wenping Wang)*

Tracking Point-Curve Critical Distances
X. Chen, E. Cohen, R.-F. Riesenfeld
University of Utah

Theoretically Based Robust Algorithms for Tracking Intersection Curves of Two Deforming Parametric Surfaces
X. Chen[1], R.-F. Riesenfeld[1], E. Cohen[1], J. Damon[2]
[1]University of Utah, [2]University of North Carolina

Subdivision Termination Criteria in Subdivision Multivariate Solvers
I. Hanniel, G. Elber
Technion, Israel Institute of Technology

Towards Unsupervised Segmentation of Semi-Rigid Low-Resolution Molecular Surfaces
Y. Wang[1], L.-J. Guibas[2]
[1]Ohio State University, [2]Stanford University

16:15-17:30	**Bus Ride from Sheraton Hotel to Carnegie Mellon University** **(Meet at the front entrance of the hotel at 16:15. The busses will leave the hotel at 16:30, and take you to a short sightseeing trip to Oakland, where the Carnegie Mellon University campus is located.)**

17:30-20:15	**Poster Session and Reception** *(Session Chairs: Myung-Soo Kim, Kenji Shimada and Soji Yamakawa)*

01: Robust Three-dimensional Registration of Range Images using a New Genetic Algorithm
J.-W. Branch[1], F. Prieto[2], P. Boulanger[3]
[1]Universidad Nacional de Colombia-Sede Medellín, [2]Universidad Nacional de Colombia-Sede Manizales,
[3]University of Alberta, Canada

02: Geometrical Mesh Improvement Properties of Delaunay Terminal Edge Refinement
B. Simpson[1], M.-C. Rivara[2]
[1]Univeristy of Waterloo, [2]University of Chile

Poster Session and Reception (continued)

03: Matrix based Subdivision Depth Computation for Extra-Ordinary Catmull-Clark Subdivision Surface Patches
G. Chen, F.-F. Cheng
University of Kentucky

04: Hierarchically Partitioned Implicit Surfaces For Interpolating Large Point Set Models
D.-T. Chen[1], B.-S. Morse[2], B.-C. Lowekamp[1], T.-S. Yoo[1]
[1]National Library of Medicine, [2]Brigham Young University

05: A New Class of Non-stationary Interpolatory Subdivision Schemes based on Exponential Polynomials
Y.-J. Choi[1], Y.-J. Lee[2], J. Yoon[2], B.-G. Lee[3], Y.-J. Kim[2]
[1]Seoul University of Venture and Information, [2]Ewha Womans University, [3]Dongseo University

06: Detection of Closed Sharp Feature Lines in Point Clouds for Reverse Engineering Applications
K. Demarsin[1], D. Vanderstraeten[2], T. Volodine[1], D. Roose[1]
[1]Katholieke Universiteit Leuven, [2]Metris N.V. Belgium

07: Feature Detection Using Curvature Maps and the Min-Cut/Max-Flow Algorithm
T. Gatzke, C. Grimm
Washington University in St. Louis

08: Computation of Normals for Stationary Subdivision Surfaces
H. Kawaharada, K. Sugihara
University of Tokyo

09: Voxelization of Free-form Solids Represented by Catmull-Clark Subdivision Surfaces
S. Lai, F.-F. Cheng
University of Kentucky

10: Interactive Face-Replacements for Modeling Detailed Shapes
E. Landreneau, E. Akleman, J. Keyser
Texas A&M University

11: Straightest Paths on Meshes By Cutting Planes
S. Lee, J. Han, H. Lee
Hongik University, Korea

12: 3D Facial Image Recognition using a Nose Volume and Curvature based Eigenface
Y. Lee[1], I. Kim[2], J. Shim[2], D. Marshall[1]
[1]Cardiff University, [2]Andong National University, Korea

13: Surface Reconstruction for Efficient Colon Unfolding
S. Lim, H.-J. Lee, B.-S. Shin
Inha University, Korea

14: Spectral Sequencing Based on Graph Distance
R. Liu, H. Zhang, O. van Kaick
Simon Fraser University, Canada

15: An Efficient Implementation of RBF-based Progressive Point-Sampled Geometry
Y.-J. Liu[1], K. Tang, J. Ajay[2]
[1]Tsinghua University, China, [2]The Hong Kong University of Science and Technology

16: Segmentation of Scanned Mesh into Analytic Surfaces based on Robust Curvature Estimation and Region Growing
T. Mizoguchi, H. Date, S. Kanai, T. Kishinami
Hokkaido University

17: Finding Mold-Piece Regions Using Computer Graphics Hardware
A.-K. Priyadarshi[1], S.-K. Gupta[2]
[1]Solidworks Corporation, [2]University of Maryland

18: A Method for FEA-based Design of Heterogeneous Objects
K.-H. Shin, J.-K. Lee
Seoul National University of Technology

19: Time-Varying Volume Geometry Compression with 4D Lifting Wavelet Transform
Y. Wang, H. Hamza
University of Central Florida

20: A Surface Displaced From a Manifold
S.-H. Yoon
Seoul National University

21: Smoothing of Meshes and Point Clouds Using Weighted Geometry-Aware Bases
T. Volodine, D. Vanderstraeten, D. Roose
Katholieke Universiteit Leuven

20:30-21:00	**Bus Ride from Carnegie Mellon University to Sheraton Hotel**

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7/27 (Thr)

Time	Event	
7:00-8:00	*** Continental Breakfast and Registration**	
8:00-8:10	**Announcement**	
8:10-9:00	**Keynote Speech II**	*(Session Chair: Hiromasa Suzuki)*

Robustness in Geometric Computations
C. M. Hoffmann
Purdue University

Time	Event	
9:00-10:15	**Curves and Surfaces II**	*(Session Chair: Hiromasa Suzuki)*

Piecewise Developable Surface Approximation of General NURBS Surfaces, with Global Error Bounds
J. Subag, G. Elber
Technion Israel Institute of Technology

Efficient Piecewise Linear Approximation of Bézier Curves with Improved Sharp Error Bound
W. Ma, R. Zhang
City University of Hong Kong

Approximate μ-Bases of Rational Curves and Surfaces
L. Shen[1], F. Chen[1], B. Jüttler[2], J. Deng[1]
[1]University of Science and Technology of China, [2]Johannes Kepler University, Linz, Austria

Time	Event	
10:15-10:45	*** Coffee and Tea Break**	
10:45-12:00	**Shape Deformation**	*(Session Chair: Gershon Elber)*

Inverse Adaptation of Hex-dominant Mesh for Large Deformation Finite Element Analysis
A. Dheeravongkit, K. Shimada
Carnegie Mellon University

Preserving Form-Features in Interactive Mesh Deformation
H. Masuda[1], Y. Yoshioka[1], Y. Furukawa[2]
[1]The University of Tokyo, [2]National Institute of Advanced Industrial Science and Technology

Surface Creation and Curve Deformations Between Two Complex Closed Spatial Spline Curves
J. Daniels II, E. Cohen
University of Utah

Time	Event	
12:00-13:30	**Lunch Break (On your own -- please see the STATION SQUARE map for various restaurant options.)**	
13:30-15:10	**Shape Description**	*(Session Chair: David Gu)*

Computing a Family of Skeletons of Volumetric Models for Shape Description
T. Ju[1], M.-L. Baker[2], W. Chiu[2]
[1]Washington University in St. Louis, [2]Baylor College of Medicine

Representing Topological Structures Using Cell-Chains
D.-E. Cardoze[1], G.-L. Miller[2], T. Phillips[2]
[1]Tanner Research, [2]Carnegie Mellon University

Constructing Regularity Feature Trees for Solid Models
M. Li, F.-C. Langbein, R.-R. Martin
Cardiff University, Cardiff, UK

Insight for Practical Subdivision Modeling with Discrete Gauss-Bonnet Theorem
E. Akleman, J. Chen
Texas A&M University

Time	Event	
15:10-15:45	**Coffee and Tea Break** (Note that coffee and tea will be served outside of GRAND STATION I)	
15:45-17:00	**Shape Recognition**	*(Session Chair: Ergun Akleman)*

Shape-Based Retrieval of Articulated 3D Models Using Spectral Embedding
V. Jain, H. Zhang
Simon Fraser University, Canada

Separated Medial Surface Extraction from CT Data of Machine Parts
T. Fujimori[1], Y. Kobayashi[2], H. Suzuki[1]
[1]The University of Tokyo, [2]CREED Corporation

Two-Dimensional Selections for Feature-Based Data Exchange
A. Rappoport[1], S. Spitz[2], M. Etzion[3]
[1]Hebrew University, [2]Proficiency Inc., [3]Proficiency Ltd.

Time	Event	
18:00-21:00	**Dinner Cruise and Award Ceremony** **(Meet at 18:00 at the GATEWAY CLIPPER. Our boat, Liberty Belle, will leave the dock at 18:20.)**	

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7/28 (Fri)

7:00-8:00	*** Continental Breakfast**	
8:00-8:10	**Announcement**	
8:10-9:00	**Subdivision Surfaces**	*(Session Chair: Sara McMains)*

Composite $\sqrt{2}$ Subdivision Surfaces
G.Li[1], W.Ma[2]
[1]South China University of Technology, [2]City University of Hong Kong

Tuned Ternary Quad Subdivision
T. Ni[1], A.-H. Nasri[2]
[1]University of Florida, [2]American University of Beirut

9:00-10:15	**Geometric Modeling**	*(Session Chair: Weiyin Ma)*

Geometric Modeling of Nano Structures with Periodic Surfaces
Y. Wang
University of Central Florida

Minimal Mean-Curvature-Variation Surfaces and Their Applications in Surface Modeling
G. Xu[1], Q. Zhang[2]
Chinese Academy of Sciences[1], Beijing Information Science and Technology University[2]

Parametric Design Method for Shapes with Aesthetic Free-Form Surfaces
T. Oya[1], T. Mikami[1], T. Kaneko[2], M. Higashi[1]
[1]Toyota Technological Institute, [2]AISHIN Seiki Co., Ltd.

10:15-10:45	*** Coffee and Tea Break**	
10:45-12:00	**Curves and Surfaces III**	*(Session Chair: Tao Ju)*

Control Point Removal Algorithm for T-spline Surfaces
Y. Wang, J. Zheng
Nanyang Technological University

Shape Representations with Blossoms and Buds
L.-Y. Stefanus
University of Indonesia, Faculty of Computer Science

Manifold T-spline
Y. He, K. Wang, H. Wang, X.-D. Gu, H. Qin
Stony Brook University

12:00-13:30	**Lunch Break (On your own -- please see the STATION SQUARE map for various restaurant options.)**	
13:30-14:20	**Geometric Processing II**	*(Session Chair: Frank Cheng)*

Simultaneous Precise Solutions to the Visibility Problem of Sculptured Models
J.-K. Seong[1], G. Elber[2], E. Cohen[1]
[1]University of Utah, [2]Technion

Density-Controlled Sampling of Parametric Surfaces Using Adaptive Space-Filling Curves
J.-A. Quinn[1], F.-C. Langbein[1], R.-R. Martin[1], G. Elber[2]
[1]Cardiff University, [2]Technion, Israel

14:20-15:35	**Engineering Applications**	*(Session Chair: Soji Yamakawa)*

Verification of Engineering Models Based on Bipartite Graph Matching for Inspection Applications
F. Fishkel, A. Fischer, S. Ar
Technion, Israel Institute of Technology

A Step towards Automated Design of Side Actions in Injection Molding of Complex Parts
A.-G. Banerjee, S.-K. Gupta
University of Maryland

Finding All Undercut-Free Parting Directions for Extrusions
X. Chen, S. McMains
University of California, Berkeley

15:35-15:45	**Closing**

Conference Chair

David Gossard (Massachusetts Institute of Technology, USA)

Program Co-Chairs

Myung-Soo Kim (Seoul National University, Korea)
Kenji Shimada (Carnegie Mellon University, USA)

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Hartmut Prautzsch (Universitaet Karlsruhe, Germany)
Hong Qin (State Univ. of New York, Stony Brook, USA)
Stephane Redon (INRIA Rhone-Alpes, France)
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Nicholas Sapidis (University of The Aegean, Greece)
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Yoshihisa Shinagawa (Univ. of Illinois at Urbana-Champaign, USA)
Yohanes Stefanus (Univ. of Indonesia)
Kokichi Sugihara (Univ. of Tokyo, Japan)
Hiromasa Suzuki (Univ. of Tokyo, Japan)
Chiew-Lan Tai (Hong Kong Univ. of Science and Technology, Hong Kong)
Shigeo Takahashi (Univ. of Tokyo, Japan)
Kai Tang (Hong Kong Univ. of Science and Technology, Hong Kong)
Changhe Tu (Shandong University, China)
Tamas Varady (Geomagic Hungary, Hungary)
Johannes Wallner (Institut fuer Geometrie, TU Wien, Austria)
Charlie Wang (The Chinese University of Hong Kong)
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Jiaye Wang (Shandong University, China)
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