

# Steven J. Gortler

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## RESEARCH INTERESTS

Computer Graphics, Computer Vision, Rigidity Theory.

## EDUCATION

January 1995	Ph.D. Computer Science	Princeton University
	Thesis: Wavelet Methods for Computer Graphics	
	Advisor: Michael Cohen	
Spring 1991	M.A. Computer Science	Princeton University
Spring 1989	B.A. Computer Science and Applied Math	Queens College/CUNY

## PROFESSIONAL EXPERIENCE

7/03 –	<b>Robert I. Goldman Professor of Computer Science</b> , Harvard University, School of Engineering and Applied Sciences.
9/98 – 6/10	<b>Director of Undergraduate Studies, Computer Science</b> , Harvard University, School of Engineering and Applied Sciences.
7/00 – 6/03	<b>Associate Professor of Computer Science</b> , Harvard University, School of Engineering and Applied Sciences.
9/96 – 6/00	<b>Assistant Professor of Computer Science</b> , Harvard University, School of Engineering and Applied Sciences.
9/98 – 6/04	<b>Research Affiliate</b> , MIT, Laboratory for Computer Science
6/98 – 8/98	<b>Visiting Scientist</b> , MIT, Laboratory for Computer Science
9/94 – 8/96	<b>Post Doctoral Researcher</b> , Microsoft Research
9/94 – 8/96	<b>Visiting Scholar</b> , University of Washington.

## **AWARDS**

**Joseph R. Levenson Memorial Teaching Prize**, Nominee, 2003

**SIGGRAPH** Significant New Researcher Award 2002

**Sloan Fellowship Award**, 1998

**NSF Career Award**, 1997

## **FUNDING**

**BSF Grant**, 2007

“Geometric Algorithms for Routing in Sensor Networks”

**NSF Grant**, 2002

“Irregular and Optimized Representations for Image Based Rendering”

**Microsoft Research Gift**, 1999, 2000, 2001, 2002

“Mesh Computation”

**IBM Partnership award**, 1997

“Lumigraph Compression”

## TEXTBOOK

### **Foundations of 3D Computer Graphics**

S.J. Gortler  
MIT Press, 2012

## SELECTED PUBLICATIONS

### **Low-level Vision by Consensus in a Spatial Hierarchy of Regions**

A. Chakrabarti, Y. Xiong, S.J. Gortler, and T. Zickler  
In *Proc. CVPR 2015*

### **From Shading to Local Shape**

Y. Xiong, A. Chakrabarti, R. Basri, S.J. Gortler, D. W. Jacobs and T. Zickler  
In *IEEE PAMI*, 37(1), 2015

### **Universal Rigidity of Complete Bipartite Graphs**

R. Connelly and S.J. Gortler  
In *arXiv:1502.02278*

### **Iterative Universal Rigidity**

R. Connelly and S.J. Gortler  
In *Discrete and Computational Geometry (2015)*, 53(4), 847-877

### **Generic Global Rigidity in Complex and Pseudo-Euclidean Spaces**

S.J. Gortler and D. Thurston  
In *The Fields Institute Conference Proceedings, 2014*

### **Characterizing the Universal Rigidity of Generic Frameworks**

S.J. Gortler and D. Thurston  
In *Discrete Comput Geom (2014)* 51(4), 1017-1036

### **On Affine Rigidity**

S.J. Gortler, C. Gotsman, L. Liu and D. Thurston  
In *Journal of Computational Geometry*, 2013

### **A Geometrical Approach to Computing Free Energy Landscapes From Short-ranged Potentials**

M. Holmes-Cerfon, S.J. Gortler and M. Brenner  
In *Proceedings of the National Academy of Sciences 110.1 (2013): E5-E14*

### **Measurement Isomorphism of Graphs**

S.J. Gortler and D. Thurston  
In *arXiv:1212.6551*

### **Duals of Orphan-Free Anisotropic Voronoi Diagrams are Triangulations**

G.D. Canas and S.J. Gortler  
In *Proceedings SOCG 2012*

### **Shape from specular flow: Is one flow enough?**

Y. Vasilyev, T. Zickler, S.J. Gortler and O. Ben-Shahar  
In *Proceedings CVPR, 2011*

### **Orphan-Free Anisotropic Voronoi Diagrams**

G.D. Canas and S.J. Gortler  
In *Discrete Comput Geom (2011)* 46:526

### **Sensor Network Localization Using Sensor Perturbation**

Y. Zhu, S.J. Gortler and D. Thurston  
In *ACM Trans. Sensor Networks* 2011

**Characterizing Generic Global Rigidity**

S.J. Gortler, A. Healy, and D. Thurston

In *American Journal of Math* 2010

**An As-Rigid-As-Possible Approach to Sensor Network Localization**

L. Zhang, L. Liu, C. Gotsman and S.J. Gortler

In *ACM Trans. Sensor Networks* 2010

**Shape Operator Metric for Surface Normal Approximation**

G.D. Canas and S.J. Gortler

In *Proceedings 18th International Meshing Roundtable* 2009

**A Linear Formulation of Shape from Specular Flow**

G.D. Canas, Y. Vasilyev, Y. Adato, T. Zickler, S.J. Gortler, and O. Ben-Shahar

In *Proceedings ICCV* 2009

**A Perception-Based Color Space for Illumination-Invariant Image Processing**

H. Chong, S.J. Gortler and T. Zickler

In *Proceedings SIGGRAPH*, 2008

**A Local/Global Approach to Mesh Parameterization**

L. Liu, L. Zhang, Y. Xu, C. Gotsman and S.J. Gortler

In *Proceedings SGP*, 2008

**The von-Kries Hypothesis and a Basis for Color Constancy**

H. Chong, S.J. Gortler and T. Zickler

In *Proceedings ICCV*, 2007

**Focal Surfaces of Discrete Geometry**

J. Yu, X Yin, X. Gu, L. McMillan and S.J. Gortler

In *Proceedings SGP*, 2007

**On Asymptotically Optimal Meshes by Coordinate Transformation”**

G.D. Canas and S.J. Gortler

In *Proceedings International Meshing Roundtable*, 2006

**Surface Remeshing in Arbitrary Codimensions**

G. D. Canas and S.J. Gortler

In *Proceedings Pacific Graphics*, 2006

**Routing with Guaranteed Delivery on Virtual Coordinates**

M Ben-Chen, C. Gotsman and S.J. Gortler

In *Proceedings CCCG*, 2006

**Discrete One-Forms on Meshes and Applications to 3D Mesh Parameterization**

S.J. Gortler, C. Gotsman and D. Thurston

In *Computer Aided Geometric Design* 33(2), 2006

**Meshing Genus-1 Point Clouds Using Discrete One-Forms**

G Tewari, C Gotsman and S.J. Gortler

In *Computers and Graphics* 30(6), 2006

**Fast Exact and Approximate Geodesics on Meshes**

V. Surazhsky, T. Surazhsky, D. Kirsanov, S.J. Gortler and H. Hoppe

In *Proceedings SIGGRAPH*, 2005

**Free-Boundary Linear Parameterization of 3D Meshes in the Presence of Constraints**

Z. Karni, C. Gotsman and S.J. Gortler

In *Proceedings Shape Modeling International*, 2005

**A Lixel for Every Pixel**

H. Chong and S.J. Gortler

In *Proceedings Fifteenth Eurographic Workshop on Rendering, 2004*

**Signal-Specialized Parameterization for Piecewise Linear Reconstruction**

G. Tewari, J. Snyder, P.Sander, S.J. Gortler, and H. Hoppe

In *Proceedings SGP, 2004*

**A New Reconstruction Filter for Undersampled Light Fields**

J. Stewart, J. Yu, S.J. Gortler and L. McMillan

In *Proceedings Fourteenth Eurographic Workshop on Rendering, 2003* :150-156

**Multi-chart Geometry Images**

P. Sander, Z. Wood, S.J. Gortler, J. Snyder and H. Hoppe

In *Proceedings SGP, 2003* :157-166

**Simple Silhouettes for Complex Surfaces**

D. Kirsanov, P. Sander and S.J. Gortler

In *Proceedings SGP, 2003* :107-112

**Geometry Videos**

H. Bricen, P. Sander, L. McMillan, S.J. Gortler and H. Hoppe

In *Proceedings ACM Symposium on Computer Animation, 2003*

**Generalized Mult-camera Scene Reconstruction Using Graph Cuts**

V. Kolmogorov, R. Zabih, and S.J. Gortler

In *Proceedings Fourth International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition 2003*.

**Signal-Specialized Parametrization**

P. Sander, S.J. Gortler, J. Snyder and H. Hoppe

In *Proceedings Thirteenth Eurographic Workshop on Rendering, 2002* :87-100

**Geometry Images**

X. Gu, S.J. Gortler and H. Hoppe

In *Proceedings SIGGRAPH, 2002*

**Minimal Surfaces for Stereo Vision**

C. Buehler, S.J. Gortler, M. Cohen and L. McMillan

In *Proceedings ECCV 2002:III* 885-899

**Unstructured Lumigraph Rendering**

C. Buehler, M. Bosse, L. McMillan, S.J. Gortler and M. Cohen

In *Proceedings SIGGRAPH, 2001*

**Texture Mapping Progressive Meshes**

P. Sander, J. Snyder, S.J. Gortler and H. Hoppe

In *Proceedings SIGGRAPH, 2001*

**Feature-Based Cellular Texturing for Architectural Models**

J. Legakis, J. Dorsey and S.J. Gortler

In *Proceedings SIGGRAPH, 2001*

**Quantum versus Classical Learnability**

R. Servedio and S.J. Gortler

In *IEEE 2001 Conference on Computational Complexity*:138-148

**Rendering Techniques 2001 (Proc. EGRW)**

Editors S.J. Gortler and K. Myszkowski

Springer Verlag

**Discontinuity Edge Overdraw**

P. Sander, H. Hoppe, J. Snyder and S.J. Gortler

In *Proceedings 2001 Symposium on Interactive 3D Graphics*:167-174

**Silhouette Clipping**

P. Sander, S.J. Gortler, H. Hoppe and J. Snyder  
In *Proceedings SIGGRAPH, 2000*

**Image Based Visual Hulls**

W. Matusik, C. Buehler, S.J. Gortler, R. Raskar and L. McMillan  
In *Proceedings SIGGRAPH, 2000*

**Dynamically Reparameterized Light Fields.**

A. Isaksen, L. McMillan and S.J. Gortler  
In *Proceedings SIGGRAPH, 2000*

**Image Based Rendering: A New Interface Between Computer Vision and Computer Graphics**

L. McMillan and S.J. Gortler  
In *Computer Graphics* 33(4), Nov 1999:57-63.

**Network Aware Internet Video Encoding**

H. Briceno, S.J. Gortler and L. McMillan  
In *Proceedings ACM Multimedia 1999*:251-26.

**Layered Depth Images**

J. Shade, S.J. Gortler, L. He and R. Szeliski  
In *Proceedings SIGGRAPH, 1998*

**Polyhedral Geometry and the Two-Plane Parameterization**

X. Gu, S.J. Gortler and M. Cohen  
In *Proceedings Eighth Eurographics Workshop on Rendering, 1997*:1-12

**Time Critical Lumigraph Rendering**

P.J. Sloan, M. Cohen and S.J. Gortler  
In *Proceedings 1997 Symposium on Interactive 3D Graphics*:17-23

**The Lumigraph**

S.J. Gortler, R. Grzeszczuk, R. Szeliski and M. Cohen  
In *Proceedings SIGGRAPH, 1996*

**Variational Modeling with Wavelets**

S.J. Gortler and M. Cohen  
In *Proc. 1995 Symposium on Interactive 3D Graphics*:35-42.

**Radiosity and Relaxation Methods**

S.J. Gortler, M. Cohen and P. Slusallek  
In *IEEE Computer Graphics and Applications* 14(6):48-58, Nov 1994.

**Hierarchical Spacetime Control**

Z. Liu, S.J. Gortler and M. Cohen  
In *Proceedings SIGGRAPH, 1994*

**Wavelet Radiosity**

S.J. Gortler, P. Schroder, M. Cohen and P. Hanrahan  
In *Proceedings SIGGRAPH, 1993*

**Wavelet Projections for Radiosity**

P. Schroder, S.J. Gortler, M. Cohen and P. Hanrahan  
In *Proc. Fourth Eurographics Workshop on Rendering, 1993*:105-114.  
Journal version appears in *Computer Graphics Forum* 13(2):141-152, June 1994.

**EDITORIAL**

ACM TOG, Associate Editor, 2010-2015

**CO-CHAIR**

Advances in Combinatorial and Geometric Rigidity, BIRS 2015

Global Rigidity, BIRS 2015

11th Eurographics Workshop on Rendering, 2001

**PROGRAM COMMITTEE**

SIGGRAPH 2000

SIGGRAPH 2001

SIGGRAPH 2005

SIGGRAPH 2006

SIGGRAPH 2008

SIGGRAPH 2009

8th Eurographics Workshop on Rendering, 1998

9th Eurographics Workshop on Rendering, 1999

12th Eurographics Workshop on Rendering, 2002

CVPR 2003

1st Symposium on Geometry Processing, 2003

2nd Symposium on Geometry Processing, 2004

6nd Symposium on Geometry Processing, 2008

7nd Symposium on Geometry Processing, 2009

8nd Symposium on Geometry Processing, 2010

9nd Symposium on Geometry Processing, 2011

12th Symposium on Geometry Processing, 2014

13th Symposium on Geometry Processing, 2015

**ADVISED PHDs**

Chris Buehler, (co-advisee) MIT, 2002

Xianfeng Gu, Harvard, 2003

Pedro Sander, Harvard 2003

Danil Kirsanov, Harvard 2004

Geetika Tewari, Harvard 2007

Hamilton Chong, Harvard 2008

Guillermo D. Canas, Harvard 2010