

Eitan Grinspun

CONTACT
Computer Science Department
Columbia University
New York, NY 10027
Vox: 212.939.7057
Fax: 212.666.0140
Net: eitan@cs.columbia.edu
<http://www.cs.columbia.edu/~eitan>

BIRTH DATE **1975** August 15

ACADEMIC POSITION **Assistant Professor** (July 2004–present).
Computer Science Department, Columbia University, New York, NY.

EDUCATION
Postdoctoral Fellow (Academic Year 2003/04).
Courant Institute, New York University, New York, NY.
Advisor: Denis Zorin (Media Research Laboratory).

Ph.D. in Computer Science (June 2003).
Caltech, Pasadena, CA.
Dissertation: *The Basis Refinement Method*.
Advisor: Peter Schröder (Multi-Res Modeling Group).
Committee: Peter Schröder, Alan Barr, Mathieu Desbrun, Jerrold E. Marsden, Petr Krysl.

M.S. in Computer Science (June 2000).
Caltech, Pasadena, CA.
Thesis: *Automated Layout for VLSI*.
Advisor: Alain Martin (Asynchronous VLSI Group).

B.A.Sc. in Engineering Science (June 1997).
University of Toronto, Toronto, Ontario, Canada.
Thesis: *Ray Tracing on Field-Programmable Gate Arrays*.
Advisor: James Stewart (Dynamic Graphics Project).

DOCTORAL THESIS **The Basis Refinement Method**
CHARMS (Conforming Hierarchical Adaptive Refinement Methods) is an adaptive simulation technology that spans the spectrum from real-time animation for games, realistic animation for film, to predictive power for engineers and scientists.

RESEARCH INTERESTS **Hierarchical and multiresolution methods** for physical simulation and geometric modeling.
Space- and time-adaptive solvers for mechanics of continuous media.
Discrete differential geometry and discrete surfaces for simulation and modeling.
Cross-disciplinary applied geometry, parallel computing, biomedical/civil-engineering.

- PUBLICATIONS Miklós Bergou, Saurabh Mathur, Max Wardetzky, Eitan Grinspun. **TRACKS: Toward Directable Thin Shells**. *SIGGRAPH 2007; ACM TOG (2007)*.
- Rony Goldenthal, David Harmon, Raanan Fattal, Michel Bercovier, Eitan Grinspun. **Efficient Simulation of Inextensible Cloth**. *SIGGRAPH 2007; ACM TOG (2007)*.
- Charles Han, Bo Sun, Ravi Ramamoorthi, Eitan Grinspun. **Frequency Domain Normal Map Filtering**. *SIGGRAPH 2007; ACM TOG (2007)*.
- Max Wardetzky, Miklós Bergou, David Harmon, Denis Zorin, Eitan Grinspun. **Discrete quadratic curvature energies**. *Computer Aided Geometric Design (2007)*.
- Miklós Bergou, David Harmon, Max Wardetzky, Denis Zorin, Eitan Grinspun. **A quadratic bending model for inextensible surfaces**. *Proceedings of Symposium on Geometry Processing (2006)*.
- Eitan Grinspun, Yotam Gingold, Jason Reisman, Denis Zorin. **Computing discrete shape operators on general meshes**. *Best Paper Award, Third Place*. *Proceedings of IEEE Eurographics 2006*. Vienna, Austria. Also in *Computer Graphics Forum*.
- Ryan Overbeck, Aner Ben-Artzi, Ravi Ramamoorthi, Eitan Grinspun. **Exploiting temporal coherence for incremental all-frequency relighting**. *Proceedings of Eurographics Symposium on Rendering (2006)*.
- Robert Burgoon, Eitan Grinspun, Zoë Wood. **Discrete shells origami**. *Proceedings of Computers And Their Applications (2006)*.
- Eitan Grinspun. **A discrete model of thin shells**. Invited chapter in Bobenko et al., Eds. *Discrete Differential Geometry*. In publication. Birkhauser (2006).
- Siu-Man Yau, Eitan Grinspun, Vijay Karamcheti, Denis Zorin.. **Sim-X: parallel system software for interactive multi-experiment computational studies**. *Proceedings of the International Parallel & Distributed Processing Symposium (IPDPS), April 2006*.
- Yotam Gingold, Adrian Secord, Jeff Han, Eitan Grinspun, Denis Zorin. **Simulating fracture and tearing of thin shells**. Technical report, NYU, 2004.
- Eitan Grinspun, Anil Hirani, Mathieu Desbrun, Peter Schröder. **Discrete shells**. In *Proceedings of the 2003 ACM SIGGRAPH/Eurographics Symposium on Computer Animation*, pages 62 – 67. Eurographics Association, 2003.
- Jeff Bolz, Ian Farmer, Eitan Grinspun, Peter Schröder. **Sparse matrix solvers on the GPU: conjugate gradients and multigrid**. *ACM Transactions on Graphics (TOG)*, 22(3):917 – 924, 2003. Also in *Proceedings of ACM Siggraph 2003*.
- Petr Krysl, Eitan Grinspun, Peter Schröder. **Natural hierarchical refinement for finite element methods**. *Int. J. Numer. Meth. Engng.*, 56(8):1109 – 1124, 2003.
- Eitan Grinspun, Petr Krysl, Peter Schröder. **CHARMS: a simple framework for adaptive simulation**. *ACM Transactions on Graphics (TOG)*, 21(3):281 – 290, 2002. Also in *Proceedings of ACM Siggraph 2002*.
- Eitan Grinspun, Peter Schröder. **Normal bounds for subdivision-surface interference detection**. In *Proceedings of the conference on Visualization 2001*, pages 333 – 340. IEEE Press, 2001.
- Eitan Grinspun, Fehmi Cirak, Peter Schröder, Michael Ortiz. **Non-linear mechanics and collisions for subdivision surfaces**. Technical report, Caltech, 1999.
- Eitan Grinspun. **Gretel: An interactive layout router for magic**. Master's thesis, Caltech, 1999.
- GRANTS AND GIFTS **Disney Compute Cluster** Walt Disney Feature Animation (June 2007). Gift of 210 rack-mounted servers for the Columbia University Computer Science department.
- CAREER: Multiresolution Foundations for Physics-Based Computer Animation and Interactive Engineering Design** NSF #0643268 (Aug 2007 - Aug 2012). Principal Investigator: Eitan Grinspun.

AES-CSR: Interactive Parallel Platforms for Multi-Experiment Computational Studies NSF #0614770 (Aug 2006 - Aug 2009).

Principal Investigators Vijay Karamcheti (NYU), Denis Zorin (NYU), Eitan Grinspun (Columbia), and Steve Parker (U. Utah). This project develops the architectural foundations for interactive computational studies.

MSPA: Computational and Mathematical Foundations for the Synthesis of Multiresolution Representations with Variational Integrators and Discrete Geometry NSF #0528402 (Nov 2005 - Nov 2008).

Principal Investigators Eitan Grinspun (Columbia), Jerrold E. Marsden (Caltech), and Peter Schröder (Caltech). This project aims to develop a multiresolution theory for discrete variational methods and discrete differential geometry.

HONORS &
AWARDS

NSF CAREER Award

IEEE Eurographics 2006 Best Paper Award, Third Place Vienna, Austria (Sept. 2006)
Eitan Grinspun *et al.* "Computing discrete shape operators on general meshes."

Everhart Lecturer Caltech (June 2003)
Caltech Distinguished Graduate Lecture Series

Three annual institute-wide talks awarded to students with "(1) a clear understanding of the current state of the research field and its broader implications, and incorporation of the students research contributions and (2) dynamic speaking skills that will both capture the audiences attention and convey the research topic in a clear and concise manner, understandable to a widely varying technical audience." (<http://www.its.caltech.edu/~els>)

NVIDIA Fellow Caltech (2002 – 2003)
Merit-based fellowship.

Caltech Special Institute Fellow Caltech (1997 – 1999)
Merit-based fellowship.

NSERC Grant for graduate studies (declined) Toronto (1995)
National Science and Engineering Research Council of Canada Grant.

NSERC Grant for summer research U. of Toronto (1995)
Topic: *Parallelizing Compilers*.
Adviser: Tarek S. Abdelrahman.

Garnet W. McKee-Lachlan Gilchrist Scholar U. of Toronto (1995)
Merit-based scholarship.

Dean's candidate U. of Toronto (1994)
National Canadian C.D. Howe Memorial Foundation Award.
One candidate per university.

Hewlett Packard Award U. of Toronto (1994)
Awarded to top student in computer science class.

Paulin Memorial Scholarship U. of Toronto (1994)
Merit-based entrance scholarship.

Toronto Scholar U. of Toronto (1994)
Merit-based entrance scholarship.

Gold Medal U. of Guelph (1993)
University of Guelph Annual Software Development Contest.
University of Guelph, Guelph, Ontario, Canada.

- PRESENTATIONS: **Dreamworks** Glendale, CA (August 2007)
 INVITED & Host: Ron Henderson
 REFEREED **Walt Disney Feature Animation** Burbank, CA (July 2007)
 Host: Joe Marks
Industrial Light & Magic San Francisco, CA (May 2007)
 Host: Steve Sullivan
PDI/Dreamworks Redwood City, CA (May 2007)
 Host: David Eberle
Pixar Animation Studios Emeryville, CA (May 2007)
 Host: Tony DeRose
Princeton University Princeton, NJ (April 2007)
 Host: Adam Finkelstein
University of Toronto Toronto, Canada (April 2007)
 Host: Karan Singh
ACM SIGGRAPH 2006, Course Organizer Boston, MA (August 2006)
Discrete Differential Geometry: An Applied Introduction
Curves and Surfaces, Invited lecture Avignon, France (June 2006)
Multiresolution Solvers for Physical Simulation
 Organizer: Prof. Peter Schröder.
World Congress on Computational Mechanics, Invited symposium lecture Los Angeles, CA
 (July 2006)
Conforming, Hierarchical, Adaptive Basis Refinement for Subdivision-, NURBS-, and Finite-Elements
 Organizer: Prof Thomas Hughes.
Mathematics of Information Technology and Complex Systems (MITACS), Invited lecture Toronto,
 Canada (June 2006)
 Organizer: Prof. Karan Singh.
Disney Feature Animation, Invited speaker and consultant Burbank, CA (August 2006)
 Host: Rasmus Tamstorf.
Rensselaer Polytechnic Institute, Invited lecture Albany, NY (May 2006)
Advances and Challenges in the Simulation of Deformable Objects Host: Prof. Barbara Cutler.
Zuse Institute Berlin, Invited speaker Berlin, Germany (September 2005)
Discrete Curvature-Based Energy for Thin Shell Simulation
 Berliner Kolloquium fr Wissenschaftliche Visualisierung. Host: Prof. Konrad Polthier.
ACM SIGGRAPH 2005, Course Organizer Los Angeles, CA (August 2005)
Discrete Differential Geometry: An Applied Introduction
Matheon/TU-Berlin, Main speaker Berlin, Germany (December 2004)
Adaptive Solvers for Thin Shells: Achievements and Challenges
 Matheon Miniworkshop on Mathematical Topics in Surface Modeling. Organizers: Profs. Alexan-
 der Bobenko and Günter Ziegler.
Mathematisches Forschungsinstitut Oberwolfach, Summer School Oberwolfach (May 2004)
A Discrete Model for Thin Shells
 Workshop on Discrete Differential Geometry.
Massachusetts Institute of Technology, Invited lecture Boston, MA (April 2004)
Multiresolution and Discrete Models as Foundations for Physical Simulation
 Hosts: Profs. Victor Zue and Jovan Popovic.
Rensselaer Polytechnic Institute, Invited lecture Albany, NY (March 2004)
Multiresolution and Discrete Models as Foundations for Physical Simulation
 Host: Prof. Malik Magdon Ismail.

Rutgers Subdivision Tutorial, Invited lecture Rutgers (Oct 2003)
Introduction to Subdivision Surfaces

Three hour course on subdivision surfaces. Host: Prof. Doug DeCarlo.

ACM SIGGRAPH/EG SCA 03, Refereed paper presentation San Diego, CA (July 2003)
Discrete Shells

ACM SIGGRAPH/Eurographics Symposium on Computer Animation, collocated with SIGGRAPH.

Everhart Lecture, Awarded presentation Caltech (June 2003)
Multi-Resolution in Graphics and Simulation, or Why is inflating valentines day balloons important for brain surgery?

Awarded a campus-wide presentation, honorarium & recognition at Caltech's commencement ceremony.

Alumni Weekend, Invited presentation Caltech (2003)
Multi-Resolution in Graphics and Simulation, or Why is inflating valentines day balloons important for brain surgery?

The Caltech Alumni Weekend includes a Seminar Day in which selected professors and students are invited to give a one hour presentation to Caltech alumni.

CIMMS Seminar, Invited presentation Caltech (2002)
The Method of Basis Refinement

The Center for Integrative Multiscale Modeling and Simulation (CIMMS) is a multi-disciplinary center for the modeling and analysis of complex phenomena across multiple time and length scales.

ACM SIGGRAPH 2002, Refereed paper presentation San Antonio, TX (2002)
CHARMS: A Simple Framework for Adaptive Simulation

CACR Seminar, Invited presentation Caltech (2001)
Conforming Hierarchical Adaptive Refinement Methods

The Center for Advanced Computing Research (CACR) is a multi-disciplinary center focused on high-performance computer-based modeling for the study of scientific phenomena and engineering designs.

IEEE Scientific Visualization 2001, Refereed paper San Diego, CA (2001)
Normal bounds for subdivision-surface interference detection

This conference, sponsored by IEEE and ACM, is the premiere venue for research on scientific visualization.

Schloss Dagstuhl, Workshop on Subdivision in Geometric Modeling and Computer Graphics, Invited presentation Wadern, Germany (2000)

Non-Linear Mechanics and Collisions for Subdivision Surfaces
 Schloss Dagstuhl, Octaviallee, D-66687 Wadern, Germany.

PRESENTATIONS: **Dynamic Graphics Project**, Seminar lecture U. of Toronto (2002)
 POSTERS & *CHARMS: A Simple Framework for Adaptive Simulation*
 SEMINARS

Caltech Computer Science Department, Seminar lecture Caltech (2002)
CHARMS: A Simple Framework for Adaptive Simulation

Dynamic Graphics Project, Seminar lecture U. of Toronto (2002)
Multi-Resolution Physical Simulation

Joint IDR-IMA Workshop on Ideal Data Representation, Poster presentation Minneapolis, MN (2001)

Adaptive Finite Element Computations for Subdivision Surfaces
 Inst. for Mathematics and its Applications (IMA), Univ. of Minnesota, Minneapolis, MN.

Workshop on the Convergence of Graphics, Vision, and Video, Poster presentation Berkeley, CA (2000)

Self-Collision Detection of Subdivision-Surfaces

University of California, Berkeley, CA.

OPAAL Site Reviews, Poster presentations (2000-2002)

Site reviews for OPAAL (Optimized Portable Algorithms and Application Libraries) initiative for complex physical simulation.

RESEARCH
EXPERIENCE**Mathematisches Forschungsinstitut Oberwolfach**, Discrete Differential Geometry Oberwolfach (March 2006) Invited workshop participant.**Multiresolution Geometric Physics** Columbia, Caltech, NYU (2004-2005)

Collaborators: Jerrold E. Marsden, Mathieu Desbrun, Peter Schröder, Denis Zorin. Purpose: bring together ideas of hierarchical methods, discrete mechanics, and discrete differential geometry to build mathematical and algorithmic foundations for multiresolution approaches to the simulation and control of mechanical systems.

Variational Surface Modeling UC Berkeley, Columbia (2004-2005)

Collaborators: Carlo Sequin, Pushkar Joshi. Purpose: rapid numerical solution of variational surface modeling problems with functionals expressed in terms of curvature, curvature-variation, and elastic potentials.

Hierarchical Real-Time Echocardiography Segmentation Columbia (2004-2005)

Collaborators: Andrew Laine, Elsa Angelini. Purpose: segmentation of rapidly deforming endocardial surface of the myocardium using a hierarchical variational approach and prolate spherical coordinates.

Discrete Curvature-Based Energy NYU, Columbia (2003-2005)

Collaborator: Denis Zorin. Purpose: develop general principles for defining curvature-based energy on discrete surfaces based on geometric invariance and convergence considerations; to demonstrate how these principles can be used to understand the behavior of some commonly used discretizations, to establish relations between some well-known discrete geometry and finite element formulations and to derive new simple and efficient discretizations.

Parallel Architectures for Design Space Exploration NYU (2003-2005)

Collaborators: Vijay Karamcheti, Denis Zorin, Siu-Man Yau. Purpose: This project aims to develop a system architecture for interactive computational studies involving thousands of simulation experiments. The architecture (1) provides a framework for high-level user interaction with computational studies, rather than individual experiments; (2) maximizes the size of the studies that can be performed at interactive rates, relying on a permeable interface between parallel system and numerical simulation software that enables aggressive data reuse and dynamic resource reallocation.

Spatially- and Temporally-Adaptive Parallel Solvers for Nonlinear Elasticity Caltech (2003)

Collaborators: Adrian Lew, Michael Ortiz, Matias Zielonka. Purpose: incorporate both basis-refinement (CHARMS), for spatial adaptivity, and asynchronous variational integrators, for temporal adaptivity, into a parallel finite-element solver and to demonstrate applications in nonlinear elasticity. Personal contributions: consultation on specializing and incorporating CHARMS into Michael Ortiz's code base; work in progress.

Discrete Mechanics of Thin Shells Caltech and NYU (2002 – 2004)

Collaborators: Mathieu Desbrun, Tom Duchamp, Anil Hirani, Jerrold E. Marsden, Peter Schröder, Adrian Secord, Yotam Gingold, Jeff Han & Denis Zorin. Purpose: develop a discrete-geometrical description of the laws governing thin shells. Personal contributions: study of continuous shell theory, development of axiomatic discrete energies, implementation of discrete shell simulation testbed and incorporation of discrete models; publication submitted, work in progress.

Adaptive Fluid Solver Caltech (2002 – 2003)

Collaborators: Mathieu Desbrun, Mark Meyer, Jos Stam & Peter Schröder. Purpose: create an adaptive solver for the Navier-Stokes equation of fluid flow. Personal contributions: expertise in adaptive computation, collaboration in converting existing finite-difference approach to a finite-element approach, implementation of OpenCHARMS adaptivity infrastructure, and discussions to develop refinement metrics and test scenarios; publication in development; work in progress.

CHARMS: Conforming Hierarchical Adaptive Refinement Methods Caltech (2000 – 2002)

Collaborators: Petr Krysl & Peter Schröder. Purpose: develop a simple and universal approach to adaptive solvers for partial differential equations. Personal contributions: creation of original concept and its application to the Subdivision Element Method (SEM), collaboration with Petr Krysl to specialize and apply to the Finite Element Method; published results in two journals and several workshops/conferences, including *ACM Transactions on Graphics*, *Proceedings of Siggraph 2002*; Ph.D. dissertation in progress.

Self-collision Detection for Subdivision Surfaces Caltech (2000 – 2001)

Collaborators: Adi Levin & Peter Schröder. Purpose: develop bounds on the Gauss map of a subdivision surface and use those bounds in an efficient self-interference detection algorithm. Personal contributions: derivation of bounds using eigenanalysis; design and implementation of collision detection algorithm; experimental measurement of results; refereed paper in *Proceedings of IEEE Scientific Visualization 2001*.

Implementation of Subdivision Element Method Caltech (1999 – 2000)

Collaborators: Fehmi Cirak & Peter Schröder. Purpose: implement the thin shells Subdivision Element Method (SEM) research infrastructure including Loop-Biermann subdivision rules, object-oriented design, and interface for adaptive solvers. Personal contributions: architect and implement the SEM infrastructure; published as technical report, work in progress.

Automated Layout for VLSI Caltech (1998 – 1999)

Collaborators: Alain Martin & Robert Southworth. Purpose: develop a fast, flexible, interactive router with automated path planning. Personal contributions: flexible/generalized technique for representing and propagating solution-fitness-values in a tile-based router; implementation as an extension to the *Magic* layout package; published as Master's thesis.

CAST: Caltech Asynchronous Synthesis Tools Caltech (1998 – 1999)

Collaborators: Matthew Hanna, Rajit Manohar & Robert Southworth. Purpose: CAST is a specification language for VLSI designs, with associated compilers & design tools. Personal contributions: together with Matthew Hanna, the development and formal specification of the CAST 2.0 language; published as technical report.

CSIM: Simulator for Asynchronous Systems Caltech (1997 – 1998)

Collaborator: Matthew Hanna. Purpose: design and implement a high-performance simulation of *production-rule specifications*. Personal contributions: design and C++ implementation of micro-kernel for the production-rule simulator; improved both the performance and memory footprint of the simulator by a factor of three compared with similar simulators; published as technical report; design served as a basis for an industrial simulator (at *Fulcrum Microsystems*) and for a research simulator (by Dr. Paul Penzes).

Ray Tracing on FPGAs U. of Toronto (1997)

Collaborators: James Stewart & Jonathan Rose. Purpose: implement a ray-tracer on Field-Programmable Gate Array (FPGA) hardware. Personal contributions: independent study under guidance of advisers; design and implementation of adder, multiplier, divider, and ray/triangle intersection-detection units; published as Bachelor's thesis in Engineering Science Division.

Parallelizing Optimizing Compilers U. of Toronto (1996)

Collaborator: Tarek S. Abdelrahman. Purpose: extend the *Polaris* compiler with parallelizing optimizations targeted for (non-uniform memory access) shared-memory architectures. Personal contribution: summer research project under guidance of adviser; implementation of unimodular transformations for nested loops; implementation of flow-graph generation.

TEACHING
EXPERIENCE

Discrete Differential Geometry COMS4995 Columbia University (2007)
Instructor and course originator.
COMS4995 is the first offering of a discrete differential geometry course in the Computer Science Department of Columbia University.

ACM SIGGRAPH 2006, Workshop Boston, MA (August 2006)
Discrete Differential Geometry: An Applied Introduction
Lecturer in full-day course on fundamental concepts of discrete differential geometry and discrete physical models.

Physical Simulation for Computer Graphics COMS6998 Columbia University (2005)
Instructor and course originator.
COMS6998 is the first course at Columbia University on advanced research topics in physical simulation for computer graphics applications. Topics covered: theory of elasticity, finite element method, numerical methods, Lagrangians and variational methods, discrete geometry, and fluid simulation.

ACM SIGGRAPH 2005, Workshop Los Angeles, CA (August 2005)
Discrete Differential Geometry: An Applied Introduction
Lecturer in full-day course on fundamental concepts of discrete differential geometry and discrete physical models.

Computer Animation COMS4167 Columbia University (2005)
Instructor and course originator.
COMS4167 is the first regular offering at Columbia University that deals with the science and mathematics of computer animation, with applications to film production, engineering visualization, and gaming platforms.

Discrete Mathematics COMS3203 Columbia University (2005–2007)
Instructor.
COMS3203 is an undergraduate course broadly covering discrete mathematics for Computer Science majors.

Hacking the GPU CS101.3 Caltech (2002)
Teaching Assistant for Peter Schröder.
Personal Contributions: collaborative curriculum development of novel class; preparation and delivery of selected lectures (e.g., mesh smoothing, class project overviews); hosting visiting lecturers. Topics: streaming architectures, NV30 hardware, NVIDIA's Cg language, Conjugate Gradient solvers and their application to mesh smoothing, Multigrid solvers, Navier-Stokes.

Topics in Geometric Modeling CS175 Caltech (2000 – 2001)
Teaching Assistant for Igor Guskov (2001) and Peter Schröder (2000).
Personal Contributions: Preparation and delivery of selected lectures (e.g., blossoms and splines, subdivision theory); grading of assignments, office hours.
Topics: mesh simplification, theory and practice of splines, subdivision surfaces.

Algorithms and Computational Geometry CS138 Caltech (2000)
Teaching Assistant for Mani Chandy and Peter Schröder.
Personal Contributions: Grading and private tutoring during office hours. Topics quarter 1: proving algorithms, reducing problems to prove hardness, the formal language UNITY, the dining philosophers problem; Topics quarter 2: convex hulls, Voronoi regions, Delauney triangulations, kd-trees.

Concurrency in Computation Caltech course CS139 Caltech (1998 – 1999)
Teaching Assistant for Alain Martin.
Personal Contributions: design and grading of selected assignments, delivery of two lectures (on slack elasticity and implementation of an $O(\log \log n)$ adder), assistance in organizing class project (on CSP Specification of a Stack Processor). Topics: Communicating Sequential Processes (CSP),

mutual exclusion and synchronization, simulation and trace of CSP, class project.

OTHER
PROFESSIONAL
EXPERIENCE

Committee member

ACM SIGGRAPH Posters 2006, ACM SIGGRAPH Sketches and Posters 2007, ACM / Eurographics Symposium on Geometry Processing 2005, 2006, ACM Siggraph / Eurographics Symposium on Computer Animation 2004, 2005, 2006, 2007.

Referee

ACM Transactions on Graphics, ACM SIGGRAPH (papers/courses), Graphics Interface, ACM Siggraph / Eurographics Symposium on Computer Animation, Eurographics, Eurographics/IEEE Symposium on Point Based Graphics, Eurographics Symposium on Geometry Processing, The Visual Computer, SIAM Multiscale Modeling and Simulation, Journal of Computational and Applied Mathematics.

Funding panels MITACS (Canada)

Judge, SURF Speaking Awards Caltech (2000 – 2001)
Summer Undergraduate Research Fellowship (SURF) Speaking Awards.

Technical Consultant, Shamrock Holdings, Inc. (2000 – 2001)
Technical evaluations for investment decisions.

Systems Consultant, Registered Nurses' Association of Ontario Toronto (1995 – 2001)
Consultation on networking, Internet & systems administration.

Graphic-Arts and Software Consultant, Dynamic Visions Ltd. Toronto (1995)
Toronto, Ontario, Canada.
Graphics modeling, lighting and rendering using *3D Studio*; game programming; software design for a virtual reality platform; collaboration with game company *Apogee*.

Software Developer, Marshall McLuhan Centre Toronto (1993)
C++/Toolbook development of interactive visual database system.

Independent Contractor, Mount Sinai Hospital Toronto (1992 – 1993)
Complete private development under contract of the product *Power*Survey*; design, development, documentation and deployment of networked survey-distribution, collection, & analysis software.

GRADUATE
STUDENTS

Active Doctoral Students: Miklós Bergou (Columbia University Presidential Fellow; B.Sc. CMU), Charles Han (B.Sc. MIT), David Harmon (National Science Foundation Graduate Fellow), Akash Garg.

Prior Students: Samson Sebastian (Columbia B.A.→Columbia M.S.), Saurabh Mathur (Columbia M.S.→Google).

Co-advisory role: Columbia: Sebastian Enrique, Ryan Overbeck. NYU: Siu-Man Yau, Adrian Secord, Yotam Gingold. UC Berkeley: Pushkar Joshi.

Ph.D. committee

Jianbo Peng, Ph.D., New York University, September 2004. "Thick Surfaces: Interactive Modeling of Topologically Complex Geometric Details."

M.S. committee

Rob Burgoon, M.S., Cal Poly-San Luis Obispo, December 2004 "Discrete Shells Origami."

LANGUAGES

English, Spanish & Hebrew: Fluent.

French: Working knowledge.

OTHER
INTERESTS

Sports: swimming, racquet sports, weight training. **Outdoors:** hiking, climbing, gardening.

Cultural: playing piano & African drums, jazz, classical music, cooking/dining.