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PERSONAL

Born April 19, 1958
Married, 2 sons, 1 daughter
United States Citizen

EDUCATION

1980 B.TECH. (Electrical Engineering), Indian Institute of Technology, Delhi
1983 M.S. (Computer Science), Cornell University
1984 Ph.D. (Computer Science), Cornell University

PROFESSIONAL EXPERIENCE

- Assistant Professor of Computer Sciences, Purdue University, 1984-89
- Associate Professor of Computer Sciences, Purdue University, 1989-93
- Visiting Associate Professor of Computer Sciences, Cornell University, 1990-91
- Professor of Computer Sciences, Purdue University, 1993-97
- Director of Image Analysis and Visualization Center, Purdue University, 1996-97
- CAM (Comp. Appd. Math) Chair of Visualization, University of Texas at Austin, 1997- Present
- Professor of Computer Sciences, University of Texas at Austin, 1997- Present
- Director of Computational Visualization Center, University of Texas at Austin, 1997- Present

HONORS, AWARDS & MEMBERSHIP IN PROFESSIONAL SOCIETIES

- National Science Talent Scholarship, 1975. Dean's Honor Roll, IIT Delhi, 1975-1980
- Scholastic Merit Award, (B. Tech. DGPA of 10.00/10.00)
- Member of National Science Foundation (NSF) Panels on Advanced Computational Research, Geometric, Symbolic and Numeric Computing, Major Research Instrumentation, 1990 – 2006
- Frame Technology Excellence in Publishing Award, 1993
- Purdue University, Provost's Research Center Initiation Award, 1994
- Association of Computing Machinery, Student Chapter, Appreciation Certificate 2001
- Member of National Institute of Health, Special Emphasis Study Sections, 2001, 2004
- Association of Computing Machinery, Recognition of Service Award, 2002
- University of Texas, Faculty Research Award 2004, Dean Research Assignment Award 2004
- Member of the Austrian Science Foundation (FWF), Scientific Evaluation Committee 2005 - Present
- Best paper award at Computer Aided Design (CAD) 2006
- Invited Jacques Morgenstern Colloquium INRIA- Sophia Antipolis, France, 2006, William Mong Distinguished Colloquium, Hong Kong University, 2012, Barrs Distinguished Colloquium, U of Florida, 2013

- Elected Member of Sigma Xi and Upsilon Pi Epsilon Honor Societies. Member of Association of Computing Machinery (ACM), Institute of Electrical and Electronic Engineers (IEEE), Biophysical Society, Society of Industrial and Applied Mathematics (SIAM), American Association for Advancement of Sciences (AAAS).
- Panel Member of the National Academy of Sciences, Vietnam Education Foundation, 2006, 2007
- Member of the NSF-CISE Board of Visitors, 2004, ETH Zurich, CS Dept Evaluation Committee (2004), INRIA Evaluation Committee 2007
- Chair Search Committee, King Abdullah University of Science and Technology (KAUST) Center Director 2008
- Member of Consolider Scientific Committee of the Spanish Ministerio de Ciencia e Innovacion, 2008, 2009
- Member of the NIH-NCRR National Biomedical Computation Resource Advisory Committee, 2006 – Present
- Member of Mol. Structure Function (MSFD), Study Section, National Institute of Health, 2008 – 2010
- Chairperson of Mol. Structure Function (MSFD) Study Section, National Institute of Health, 2011 – 2014
- Invited Speaker at the 2010 Visions of Computing Lecture Series, UT-CS Austin, November 2010
- University of Texas-ICES-Moncrief Grand Challenge Faculty Research Award, 2009, 2012, 2016
- Fellow of the University of Texas Institute for Cellular and Molecular Biology (ICMB) 2009
- Fellow of The American Association for the Advancement of Science (AAAS), 2008 –, Association for Computing Machinery (ACM), 2009-, 2010-, Institute of Electrical and Electronic Engineers (IEEE), 2013 –; Fellow of the Society of Industrial and Applied Mathematics (SIAM) Aug, 2016 –
- Best Paper Award at ACM Symposium on Solid and Physical Modeling, 2010, Haifa, Israel
- Program Co-Chair, SIAM/ACM Geometric and Physical Modeling Conference, Orlando, Florida – 2011
- Conference Co-Chair of Pacific Graphics 2016, Okinawa Institute of Science and Technology (OIST), Naha, Okinawa, Japan, October 2016
- Keynote Addresses at SIAM Computational Science (2000), Pacific Computer Graphics (2002), Volume Graphics (2004), EuroGraphics (2004), Computational Algebra (2004), Cyberworlds (2005), Institute of Mathematics and its Applications –IMA (2007), HSEMB Conference (2007), CAD Conference (2009), Physics/Biology Interface (2009), CompImage (2010), ACM Solid Physical Modeling (2010), Symposium on Geometry Processing (2011), IEEE Pacific Vis (2012), Intl Conf. On Contemporary Computing (2012), Advances in Comp. Mechanics, (2013), 22nd Meshing Roundtable (2013), NSF CyberBridges Workshop (2013), MBI-OSU Large Data Visualization Workshop (2014), Banff EM Workshop (BIRS) (2014), "Chemical Imaging and Visualization with Uncertainty Quantification", Computer Methods in Biomechanics and Biomedical Engineering, Imaging and Visualization, CMBBE (2015), Innovative Modelling Techniques for Predictive Medicine (2015), "Statistical Bio-Modeling for Predictive Medicine", UT Austin/Portugal CoLab-Advanced Computing research, Innovative Modeling Techniques for Predictive Medicine Workshop, 2015, IST, Lisbon, Portugal, "Mathematical Modeling and Analysis of Protein Cages", OIST, Jan 16, 2016.
- Invited Presentations at BIRS, Dagstuhl, Oberwolfach
- Collaborative Teaching Grant Award with Dr. D. Briscoe for BIO-(In)formatic Architecture Modeling in Architectural Design (ARC350R/ARC386M/CS378, Spring 2016, Funded by Learning Sciences, Provost Teaching Fellows Selection Committee, Oct 22, 2015
- Member of BIMOS Scientific Advisory Board to assist with further design and development of the BIMOS Program, June 20-21, 2016, Berlin Germany
- Pioneer Award on Solid Modeling from Solid Modeling Association, July, 2016
- Distinguished Alumni Award, Distinguished Alumni Award Committee of IIT Delhi, Aug, 2016
- Moncrief Grand Challenge Faculty Award, ICES Institute for Computational Engineering and Sciences, August 2016.

RESEARCH ACTIVITIES

My interdisciplinary research is focused on the algorithmic and computational mathematics underpinnings of Imaging and Geometry Data Sciences, Computer Graphics, Bio-Informatics and Visualization with applications stemming from bio-medical engineering, physical and chemical sciences and bio-inspired architecture. My commitment to the field of computational and predictive medicine is evidenced by my research focus this past decade. I design and implement scalable solutions for: (a) forward and inverse problems in microscopy, spectroscopy, biomedical imaging; (b) constructing spatially realistic and hierarchical phenomenological models; (c) development of fast high-dimensional search/scoring engines for predicting energetically favorable multi-molecular and cellular complexes; and (d) statistical analysis and interrogative visualization of neuronal form-function. Additionally, I have courtesy appointments and

supervise M.S and Ph.D. students from several UT departments, including, biomedical and electrical engineering, neurobiology, and mathematics. I currently serve on the editorial boards for the International Journal of Computational Geometry and Applications, and the ACM Computing Surveys.”

The following is a link is to the publications by Chandrajit Bajaj:

<http://scholar.google.com/citations?user=gyL3CZ0AAAAJ&user=gyL3CZ0AAAAJ>

JOURNAL PUBLICATIONS

1. C. Bajaj (1985). “Geometric Optimization and the Polynomial Hierarchy”, *Lecture Notes in Computer Science*, 176-195.
2. C. Bajaj (1986). "Proving Geometric Algorithm Non-Solvability: An Application of Factoring Polynomials", *Journal of Symbolic Computation*, 2(1):99-102
3. C. Bajaj, M. Kim (1987). “Generation of Configuration Space Obstacles: The Case of Moving Algebraic Curves”, *IEEE International Conference on Robotics and Automation*, 4, 979-984
4. S. Abhyankar, C. Bajaj (1987). "Automatic Parameterization of Rational Curves and Surfaces I: Conics and Conicoids", *Computer Aided Design*, 19(1):11-14
5. S. Abhyankar, C. Bajaj (1987). "Automatic Parameterization of Rational Curves and Surfaces II: Cubics and Cubicoids", *Computer Aided Design*, 19(9):499-502
6. M. Atallah, C. Bajaj (1987). "Efficient Algorithms for Common Transversals", *Information Processing Letters*, 25(2):87-91
7. C. Bajaj (1987). "Geometric Optimization and the Polynomial Hierarchy", *Theoretical Computer Science*, 54(1):87-102
8. S. Abhyankar, C. Bajaj (1988). "Automatic Parameterization of Rational Curves and Surfaces III: Algebraic Plane Curves", *Computer Aided Geometric Design*, 5(4):309-321
9. M. Wu, C. Bajaj, C. Liu (1988). "Face Area Evaluation Algorithm for Solids", *Computer Aided Design*, 20(2):75-82
10. C. Bajaj, T. Moh (1988). "Generalized Unfoldings for Shortest Paths in Euclidean 3-Space", *International Journal of Robotics Research*, 7(1):71-76
11. C. Bajaj, M. Kim (1988). "Generation of Configuration Space Obstacles: The Case of Moving Spheres", *IEEE Journal of Robotics and Automation*, 4(1):94-99
12. C. Bajaj (1988). "The Algebraic Degree of Geometric Optimization Problems", *Discrete and Computational Geometry*, 3(1):177-191
13. C. Bajaj, C. Hoffmann, R. Lynch, J. Hopcroft (1988). "Tracing Surface Intersections", *Computer Aided Geometric Design*, 5(4):285-307
14. S. Abhyankar, C. Bajaj (1989). "Automatic Parameterization of Rational Curves and Surfaces IV: Algebraic Space Curves", *ACM Transactions on Graphics*, 8(4):325-334
15. C. Bajaj, M. Kim (1989). "Generation of Configuration Space Obstacles: The Case of Moving Algebraic Curves", *Algorithmica*, 4(1):157-172
16. C. Bajaj, M. Li (1989). "Geometric Optimization and $D^{\wedge}P$ -Completeness", *Discrete and Computational Geometry*, 4(1):3-13. Abstract appears in *Zentralblatt fur Mathematik*.
17. C. Bajaj (1990). “Rational Hypersurface Display”, *Computer Graphics*, 24(2), 117-127
18. C. Bajaj, M. Kim (1990). "Convex Hulls of Objects bounded by Algebraic Curves", *Algorithmica*, 6(1):533-553
19. C. Bajaj, M. Kim (1990). "Generation of Configuration Space Obstacles: The Case of Moving Algebraic Surfaces", *International Journal of Robotics Research*, 9(1):92-112
20. C. Bajaj, T. Dey (1990). "Polygon Nesting and Robustness", *Information Processing Letters*, 35(1):23-32
21. C. Bajaj, T. Dey (1990). “Robust Computations of Polygon Nesting”, *International Workshop on Discrete Algorithms and Complexity*, 33-40
22. J. Johnstone, C. Bajaj (1990). "Sorting Points along an Algebraic Curve", *Siam Journal on Computing*, 19(5):925-967
23. C. Bajaj, I. Ihm (1992). "Algebraic Surface Design with Hermite Interpolation", *ACM Transactions on Graphics*, 11(1):61-91
24. C. Bajaj, T. Dey (1992). "Convex Decomposition of Polyhedra and Robustness", *Siam Journal on Computing*, 21(2):339-364

25. T. Dey, K. Sugihara, C. Bajaj (1992). "Delaunay Triangulations in Three Dimensions with Finite Precision Arithmetic", *Computer Aided Geometric Design*, 9(6):457-470
26. T. Dey, C. Bajaj, K. Sugihara (1991). "On Good Triangulations in Three Dimensions", *International Journal of Computational Geometry and Applications*, 2(1):75-95
27. C. Bajaj, I. Ihm (1992). "Smoothing Polyhedra using Implicit Algebraic Splines", *Computer Graphics*, 26(2):79-88.
28. C. Bajaj, J. Canny, T. Garrity, J. Warren (1993). "Factoring Rational Polynomials over the Complexes", *Siam Journal on Computing*, 22(2):318-331
29. C. Bajaj, I. Ihm, J. Warren (1993). "Higher-Order Interpolation and Least-Squares Approximation Using Implicit Algebraic Surfaces", *ACM Transactions on Graphics*, 12(4):327-347
30. V. Anupam, C. Bajaj, D. Schikore, M. Schikore (1994). "Distributed and Collaborative Visualization", *IEEE Computer*, 27(7):37-43
31. C. Bajaj, G. Xu (1994). "NURBS Approximation of Surface/Surface Intersection Curves", *Advances in Computational Mathematics*, 2(1):1-21
32. V. Anupam, C. Bajaj (1994). "SHASTRA - An Architecture for Development of Collaborative Applications", *International Journal of Intelligent and Cooperative Information Systems*, 3(2):155-166
33. V. Anupam, C. Bajaj (1994). "SHASTRA: Multimedia Collaborative Design Environment", *IEEE Multimedia*, 1(2):39-49
34. C. Bajaj, F. Bernardini, G. Xu (1995). "Automatic Reconstruction of Surfaces and Scalar Fields from 3D Scans", *Computer Graphics*, ACM SIGGRAPH 1995 pp 109-118
35. C. Bajaj, A. Royappa (1995). "Finite Representations of Real Parametric Curves and Surfaces", *International Journal of Computational Geometry and Applications*, 5(3):313-326
36. C. Bajaj, J. Chen, G. Xu (1995). "Modeling with Cubic A-patches", *ACM Transactions on Graphics*, 14(2):103-133
37. C. Bajaj, E. Coyle, K. Lin (1996). "Arbitrary Topology Shape Reconstruction from Planar Cross Sections", *Graphical Models and Image Processing*, 58(6):524-543
38. C. Bajaj, G. Xu (1997). "Piecewise Rational Approximation of Real Algebraic Curves", *Journal of Computational Mathematics*, vol. 15(1):55-71
39. C. Bajaj, F. Bernardini, G. Xu (1997). "Reconstructing Surfaces and Functions on Surfaces from Unorganized Three-Dimensional Data", *Algorithmica*, 19(1):243-261
40. C. Bajaj, G. Xu (1997). "Spline Approximations of Real Algebraic Surfaces", *Journal of Symbolic Computation, Special Issue on Parametric Algebraic Curves and Applications*, 23(23):315-333
41. C. Bajaj, G. Xu (1997). "Modeling and Visualization of C1 and C2 Scattered Function Data on Curved Surfaces", *Proc. of 2nd Pacific Conference on Computer Graphics and Applications*, 19-29
42. C. Bajaj, R. Holt, A. Netravali (1998). "Rational Parameterizations of Nonsingular Real Cubic Surfaces", *ACM Transactions on Graphics*, 17(1):1-31
43. E. Sacks, C. Bajaj (1998). "Sliced Configuration Spaces for Curved Planar Bodies", *International Journal Of Robotics Research*, 17(6):639-651
44. C. Bajaj, D. Schikore (1998). "Topology Preserving Data Simplification with Error Bounds", *Journal on Computers and Graphics*, 22(1):3-12
45. L. Moriarty, B. Duerstock, C. Bajaj, K. Lin, R. Borgens (1998). "Two and Three Dimensional Computer Graphics Evaluation of the Subacute Spinal Cord Injury", *Journal of Neurological Sciences*, 155(2):121-137
<http://tinyurl.com/PMID9562256>, PMID: 9562256, PMC Journal in Process
46. C. Bajaj, C. Baldazzi, S. Cutchin, A. Paoluzzi, V. Pascucci, M. Vicentino (1999). "A programming approach for complex animations. Part I. Methodology", *Computer Aided Design*, 31(11):695-710
47. C. Bajaj, G. Xu (1999). "A-Splines: Local Interpolation and Approximation Using Gk- Continuous Piecewise Real Algebraic Curves", *Computer Aided Geometric Design*, 16(6):557-578
48. F. Bernardini, C. Bajaj, J. Chen, D. Schikore (1999). "Automatic Reconstruction of 3D CAD Models from Digital Scans", *International Journal on Computational Geometry and Applications*, 9(4-5):327-369
49. C. Bajaj, J. Chen, R. Holt, A. Netravali (1999). "Energy Formulations of A-Splines", *Computer Aided Geometric Design*, 16(1):39-59
50. C. Bajaj, V. Pascucci, G. Zhuang (2002). "Single Resolution Compression of Arbitrary Triangular Meshes with Properties", *Computational Geometry: Theory and Applications*, 14(1-3):167-186
51. C. Bajaj, E. Coyle, K. Lin (1999). "Tetrahedral Meshes from Planar Cross Sections", *Computer Methods in Applied Mechanics and Engineering*, 179(1-2):31-52

52. B. Duerstock, C. Bajaj, V. Pascucci, D. Schikore. K. Lin, R. Borgens (2000). "Advances in three-dimensional reconstruction of the experimental spinal cord injury", *Computerized Medical Imaging and Graphics*, 24(6):389-406, <http://tinyurl.com/PMID11008186>, PMID: 11008186, PMC Journal in Process
53. C. Bajaj, I. Ihm, S. Park (2000). "Compression-Based 3D Texture Mapping for Real-Time Rendering", *Graphical Models*, 62(6):391-410
54. C. Bajaj, A. Royappa (2000). "Parameterization in Finite Precision", *Algorithmica*, 27(1):100-114
55. G. Xu, C. Bajaj, W. Xue (2000). "Regular algebraic curve segments (I)-Definitions and characteristics", *Computer Aided Geometric Design*, 17(6):485-501
56. G. Xu, C. Bajaj, C. Chu (2000). "Regular Algebraic Curve Segments (II) - Interpolation and Approximation", *Computer Aided Geometric Design*, 17(6):503-519
57. C. Bajaj, I. Ihm, S. Park (2001). "3D RGB Image Compression for Interactive Applications", *ACM Transactions on Graphics*, 20(1):10-38
58. G. Xu, H. Huang, C. Bajaj (2001). "C1 Modeling with A-patches from Rational Trivariate Functions", *Computer Aided Geometric Design*, 18(3):221-243
59. C. Bajaj, G. Xu (2001). "Regular Algebraic Curve Segments (III) - Applications in Interactive Design and Data Fitting", *Computer Aided Geometric Design*, 18(3):149-173
60. H. Pfister, B. Lorensen, C. Bajaj, G. Kindlmann, W. Schroeder, L. Avila, K. Raghuram, R. Machiraju, J. Lee (2002). "The Transfer Function Bake-off", *IEEE Computer Graphics and Applications*, 21(3):16-22
61. C. Bajaj, S. Schaefer, J. Warren, G. Xu (2002). "A Subdivision Scheme for Hexahedral Meshes", *The Visual Computer*, 18(5):343-356
62. G. Xu, C. Bajaj, S. Evans (2002). "C1 Modeling with Hybrid Multiple-sided A-patches", *Special issue on Surface and Volume Reconstructions in the International Journal of Foundations of Computer Science*, 13(2):261-284
63. C. Bajaj, G. Xu, R. Holt, A. Netravali (2002). "Hierarchical Multiresolution Reconstruction of Shell Surfaces", *Computer Aided Geometric Design*, 19(2):89-112
64. B. Duerstock, C. Bajaj, R. Borgens (2003). "A Comparative Study of the Quantitative Accuracy of Three-Dimensional Reconstructions of Spinal Cord from Serial Histological Sections", *Journal of Microscopy*, 210(2):138-148, <http://tinyurl.com/PMID12753096>, PMID: 12753096, PMC Journal In Process
65. W. Blanke, C. Bajaj (2003). "Active Visualization in a Multidisplay Immersive Environment", *Computers & Graphics*, 27(5):681-691
66. C. Bajaj, G. Xu (2003). "Anisotropic Diffusion of Surfaces and Functions on Surfaces", *ACM Transactions on Graphics*, 22(1):4-32
67. W. Jiang, M. Baker, Q. Wu, C. Bajaj, W. Chiu (2003). "Applications of Bilateral Denoising Filter in Biological Electron Microscopy", *Journal of Structural Biology*, 144(1-2):132-143, doi:10.1016/j.jsb.2003.09.028, <http://tinyurl.com/PMID14643214>, PMID: 14643214, PMC Journal In Process
68. G. Xu, C. Bajaj (2003). "Curvature Computations of 2-manifolds in R^k ", *Journal of Computational Mathematics*, 21(5):681-688
69. C. Bajaj, V. Pascucci, A. Shamir, R. Holt, A. Netravali (2003). "Dynamic Maintenance and Visualization of Molecular Surfaces", *Discrete Applied Mathematics*, 127(1):23-51 doi: [10.1016/S0166-218X\(02\)00283-4](https://doi.org/10.1016/S0166-218X(02)00283-4).
70. C. Bajaj, A. Netravali (2003). "NURBS Approximation of A-splines and A-patches", *International Journal of Computational Geometry and Applications*, 13(5):359-390
71. C. Bajaj, Z. Yu, M. Auer (2003). "Volumetric Feature Extraction and Visualization of Tomographic Molecular Imaging", *Journal of Structural Biology*, 144(1-2):132-143, doi:10.1016/j.jsb.2003.09.037, <http://tinyurl.com/PMID14643216>, PMID: 14643216, PMC Journal In Process
72. C. Bajaj, G. Xu (2004). "Adaptive Surfaces Fairing by Geometric Diffusion", *Geometric Modeling: Techniques, Applications, Systems and Tools, 2004*, M. Sarfraz(ed), Kluwer Academic Publishers, ISBN: 1-4020-1817-7, 31-49, doi: [10.1109/IV.2001.942137](https://doi.org/10.1109/IV.2001.942137)
73. Y. Zhu, B. Carragher, R. Glaeser, D. Fellmann, C. Bajaj, M. Bern, F. Mouche, F. Haas, R. Hall, D. Kriegman, et al (2004). "Automatic Particle Selection: Results of a Comparative Study", *Journal of Structural Biology*, 145(1-2):3-14, doi: 10.1016/j.jsb.2003.09.033, <http://tinyurl.com/PMID15065668>, PMID: 15065668, PMC Journal In Process
74. Y. Song, Y. Zhang, C. Bajaj, N. Baker (2004). "Continuum Diffusion Reaction Rate Calculations of Wild-Type and Mutant Mouse Acetylcholinesterase: Adaptive Finite Element Analysis", *Biophysical Journal*, 87(3):1558-1566, doi: 10.1529/biophysj.104.041517, <http://tinyurl.com/PMC1304562>, PMCID: PMC1304562
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77. C. Bajaj, I. Ihm, J. Min, J. Oh (2004). "SIMD Optimization of Linear Expressions for Programmable Graphics Hardware", *Computer Graphics Forum*, 23(4):697-714, doi: 10.1111/j.1467-8659.2004.00803.x, <http://tinyurl.com/PMC2782869>, PMID: PMC2782869.
78. C. Bajaj, B. Sohn, V. Siddavanahalli (2004). "Volumetric Video Compression and Interactive Playback", *Computer Vision and Image Understanding, special issue on "Model-based and Image-based 3D Scene Representation for Interactive Visualization"*, 96(3):435-452, <http://tinyurl.com/PMC2805201a>, PMID: PMC2805201
79. Y. Zhang, C. Bajaj, B. Sohn (2005). "3D Finite Element Meshing from Imaging Data", *Computer Methods in Applied Mechanics and Engineering (CMAME) on Unstructured Mesh Generation*, 194(48-49):5083-5106, doi:10.1016/j.cma.2004.11.026, <http://tinyurl.com/PMC2748876>, PMID: PMC2748876
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81. Z. Yu, C. Bajaj (2005). "Automatic Ultrastructure Segmentation of Reconstructed CryoEM Maps of Icosahedral Viruses", *IEEE Transactions on Image Processing: Special Issue on Molecular and Cellular Bioimaging*, 14(9): 1324-37, doi: 10.1109/TIP.2005.852770, <http://tinyurl.com/PMID16190468>, PMID16190468, PMC Journal in Process
82. C. Bajaj, J. Castrillon-Candas, V. Siddavanahalli, Z. Xu (2005). "Compressed Representations of Macromolecular Structures and Properties", *Structure*, 13(3):463-471, doi:10.1016/j.str.2005.02.004, <http://tinyurl.com/PMID15766547>, PMID15766547, PMC Journal in Process
83. Y. Zhang, G. Xu, C. Bajaj (2005). "Surface Smoothing and Quality Improvement of Quadrilateral/Hexahedral Meshes with Geometric Flow", *Comm. in Numerical Methods in Engineering*, 24, doi:10.1002/cnm.1067, PMID: PMC2761001
84. D. Zhang, J. Suen, Y. Zhang, Y. Song, Z. Radic, P. Taylor, M. Holst, C. Bajaj, N. Baker, J. McCammon (2005). "Tetrameric Mouse Acetylcholinesterase: Continuum Diffusion Rate Calculations by Solving the Steady-State Smoluchowski Equation Using Finite Element Methods", *Biophys. J.* 88(3):1659-1665, doi: 10.1529/biophysj.104.053850, <http://tinyurl.com/PMC1305222>, PMID: PMC1305222
85. Y. Zhang, C. Bajaj (2006). "Adaptive and Quality Quadrilateral/Hexahedral Meshing from Volumetric Data", *Computer Methods in Applied Mechanics and Engineering*, 195(9-12):942-960, doi:10.1016/j.cma.2005.02.016, <http://tinyurl.com/PMC2740490>, PMID: PMC2740490
86. X. Zhang, C. Bajaj, B. Kwon, T. Dolinsky, J. Nielsen, N. Baker (2006). "Application of New Multiresolution Methods for the Comparison of Biomolecular Electrostatic Properties in the Absence of Structural Similarity", *Multiscale Modeling and Simulation*, 5(4):1196-1213, doi: 10.1137/050647670, <http://tinyurl.com/PMC2561295>, PMID: PMC2561295
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88. G. Xu, Q. Pan, C. Bajaj (2006). "Discrete Surface Modeling Using Partial Differential Equations", *Computer Aided Geometric Design*, 23(2):125-145, doi:10.1016/j.cagd.2005.05.004, <http://tinyurl.com/PMC2760856>, PMID: PMC2760856
89. W. Liu, Y. Liu, D. Farrell, L. Zhang, X. Wang, Y. Fukui, N. Patankar, C. Bajaj, Y. Zhang, J. Lee, J. Hong, X. Chen, H. Hsu (2006). "Immersed Finite Element Method and Its Applications to Biological Systems", *Computer Methods In Applied Mechanics and Engineering (CMAME)*, 195(13-16):1722-1749, doi:10.1016/j.cma.2005.05.049, <http://tinyurl.com/PMC2830735>, PMID: PMC2830735
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91. Y. Zhang, G. Xu, C. Bajaj (2006). "Quality Meshing of Implicit Solvation Models of Biomolecular Structures", *The special issue of Computer Aided Geometric Design (CAGD) on Applications of Geometric Modeling in the Life Sciences*, 23(6):510-530, doi: 10.1016/j.cagd.2006.01.008, <http://tinyurl.com/PMC2756697>, PMID: PMC2756697

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RESEARCH GRANTS & CONTRACTS

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2. 9/1/86 - 6/30/88 "Experimental Laboratory for Electronic Prototyping and Geometric Modeling", (\$117,000), National Science Foundation, CCR-8612590, (with M. Atallah, C. Hoffmann)
3. 7/1/87 - 6/30/88 "Algorithmic Robotics: Geometric Modeling and Motion Planning", (\$10,200), Purdue Research Foundation, David Ross Grant
4. 1/1/88 - 6/30/88 "Algebraic Methods in Solid Modeling", (\$26,500), Computer Aided Manufacturing - International, Contract No. H928/C
5. 7/1/88 - 6/30/89 "Algorithmic Robotics: Geometric Modeling and Motion Planning", (\$10,200), Purdue Research Foundation, David Ross Grant
6. 10/1/88 - 9/31/89 "An Experimental Laboratory for Computational Algebraic Geometry", (\$75,000), Defense University Research Instrumentation Program, DAAL03-88-G-0068, (with S. Abhyankar)
7. 1/1/88 - 6/30/90 "Computational Algebraic Geometry and Geometric Modeling", (\$150,000), Army Research Office/ Cornell MSI, DAAG29-85-C-0018, (with S. Abhyankar)
8. 7/15/88 - 9/31/90 "Modular Algorithms in Computational Algebraic Geometry", (\$217,000), Office of Naval Research, N00014-88-0402, (with S. Abhyankar)
9. 8/14/89 - 8/13/90 "Surface Fitting using Algebraic Surfaces", (\$10,200), Purdue Research Foundation, David Ross Grant
10. 5/15/89 - 9/31/91 "Algorithmic Algebraic Geometry", (\$160,000), National Science Foundation, DMS-8816286, (with S. Abhyankar)
11. 8/14/90 - 8/13/91 "Polyhedral Decomposition Algorithms", (\$10,200), Purdue Research Foundation, David Ross Grant

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13. 7/15/90 - 9/31/92 "Solving and Visualizing Systems of Algebraic Equations", (\$102,000), National Science Foundation, CCR-9002228
14. 11/16/91 - "Distributed and Collaborative Geometric Design", (\$30,000), American Telephone and Telegraph, AT & T 730-1398-3000
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18. 9/1/91 - 8/31/94 "Algorithmic Algebraic Geometry", (\$367,035), National Science Foundation, DMS-9101424, (with S. Abhyankar)
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32. 1/1/96 - "Center on Image Analysis and Data Visualization", \$100,000 per year, Purdue University
33. 3/1/96 - 2/28/97 "Repetitive Contact Modeling, Analysis & Visualization", (\$139,760), National Science Foundation, CDA-9529499, (with B. Hillberry, and E. Sacks)
34. 8/14/96 - 8/13/97 "Deformable Modeling", (\$9,900), Purdue Research Foundation, Davis Ross Grant
35. 6/1/96 - 5/31/97 "Distributed Analysis and Visualization of Spinal Cord Injuries", (\$39,800) per year, Canadian Spinal Research Organization, Award No: 3409670
36. 6/1/96 - 2/28/97 "Flexible Constraint Management in CSCW", (\$26,500), National Institute of Standards and Testing, NIST grant No: 60NANB4D1645
37. 3/1/97 - 2/28/98 "Interrogative Virtual Reality", (\$126,818), Office of Naval Research N0014-97-1-0398
38. 4/1/97 - 12/31/97 "Visualization of Scalar, Vector and Tensor Field Data", (\$126,882), Air Force Office of Scientific Research, F 49620-97-1-0278
39. 6/1/97 - 4/30/98 "Prostate Image Characterization", (\$13,475), Indiana Center for Advanced Research, Award No: 6712868
40. 8/1/98 - 7/31/00 "Modeling and Visualization with Algebraic Surfaces and Splines", (\$150,000), National Science Foundation, CCR-9732306
41. 8/25/98 - 8/24/00 "Data Intensive, Display Intensive Visualization", (\$400,000), Sandia National Labs and Lawrence Livermore National Labs BD-4485
42. 7/1/98 - 6/3/00 "Data Intensive Visualization", (\$113,328), National Aeronautics and Space Administration NCC2-5276

43. 9/1/98 - 8/31/01 "Multiscale Physics-Based Simulation of Fluid Flow for Energy and Environmental Applications", (\$1,700,000) National Science Foundation, DMS-9873326 (with J. Wheeler, T. Arbogast, S. Bryant, Dawson)
44. 2/24/99 - 9/30/00 "Structural Simulation Using Multiresolution Material Models", (\$400,000) Sandia National Labs (with T. Oden, I. Babuska, G. Rodin)
45. 10/1/99 - 9/30/00 "Interaction Environments", (\$105,000) National Partnership for Advanced Computing Infrastructure (NSF-NPACI)
46. 10/15/99 - 9/30/02 "Terascale Data Visualization", (\$593,536) National Science Foundation ACI-9982297
47. 1/1/00 - 12/31/01 "MetaBuffer: Combining Realtime Parallel Graphics and Multiresolution VR Display", (\$161,040) Texas Higher Education Coordinating Board (with Donald Fussell)
48. 6/1/00 - 5/31/03 "Interrogative Synthetic Environments", (\$51,000) National Science Foundation INT-9987409
49. 10/1/00 - 9/30/01 "Interaction Environments", (\$308,000) National Partnership for Advanced Computing Infrastructure (NSF-NPACI)
50. 9/1/00 - 3/31/04 "Formal Methods Visualization", (\$493,177) National Science Foundation CCR-9988357 (with J. Moore)
51. 06/30/99 to 06/29/02 "Research in the Area of Computational and Applied Mathematics", (\$12,402), Lucent Technologies
52. 10/01/01 - 09/30/02 "Interaction Environments", (\$316,000), National Partnership for Computational Infrastructure (NSF-NPACI) Sub Contract from SDSC
53. 10/01/01 to 09/31/04 "Data Intensive and Display Intensive Computing", (\$400,000), Lawrence Livermore National Laboratory
54. 10/1/02- 9/30/05 "ITR: Large Scale Simulations of Emulsions", (\$400,000) National Science Foundation, ACI: 0220037 (with G. Rodin, R. Bonnecaze)
55. 10/01/02 - 09/30/03 "Interaction Environments", (\$315,000), National Partnership for Computational Infrastructure (NSF-NPACI) Sub Contract from SDSC
56. 9/1/03 to 8/31/04 "4D Deformable Anatomy Models for Radiation Therapy" (\$19,000) Whitaker-Biomed (with L. Dong)
57. 10/01/03 - 04/30/05 "Interaction Environments", (\$275,000). National Partnership for Computational Infrastructure (NSF-NPACI) Sub Contract from UCSD-SDSC
58. 9/15/03 - 8/30/07 "ITR: Subnanometer Structure Based Fold Determination of Biological Complexes", (\$2,250,000) National Science Foundation, EIA: 032550 (with Wah Chiu and Andrej Sali)
59. 09/1/03 - 08/31/08 "Mastadon: A High Throughput Simulation Infrastructure", (\$1,238,471) National Science Foundation (with R. Mikkulainen, D. Burger, K. McKinley and V. Ramachandran)
60. 06/1/04 - 05/31/08 "Towards a Computational Center for Biomolecular Complexes", (\$2,263,996) National Institutes of Health, P20-RR020647, (with W. Chiu (Baylor College of Medicine), H. Baker (Rutgers University), A. Olson (The Scripps Research Institute))
61. 04/1/05 - 03/31/2010 "Hierarchical Methods for Bio-Molecular Complexes", (\$718,065) National Institutes of Health, R01-GM074258
62. 10/01/05 - 09/30/10 "A Dynamic Data Driven System for Laser Treatment of Cancer", (\$805,930), National Science Foundation, CNS-0540033, (with T. Oden (PI), K. Diller, J. Browne)
63. 03/1/06 - 02/28/10 "A New Approach to Rapid Protein-Protein Docking", (\$850,000) National Institutes of Health, R01-GM07308
64. 09/01/06 - 08/31/09 MRI: "Acquisition of a High Performance Computing System for Online Simulation", National Science Foundation Equipment Grant (\$800,000), CNS-0619838, (with O. Ghattas, T. Oden, J. Boisseau, M. Wheeler)
65. 08/15/06 - 08/14/07 UT- Austin, Texas Institute for Drug Diagnostics Development - TI3D, (\$100,000), Post-Doctoral Student Grant
66. 03/01/07 - 02/28/13 "Software Maintenance for Biomolecular Complexes", (\$900,000), National Institutes of Health, R01-EB004873
67. 09/01/09 - 08/31/12 "Advanced Computing: Patient Specific Cardiovascular Modeling and Analysis", with T. Hughes of UT and Adelia Sequeira, et al, of Portugal, (\$175,000), Portuguese Science and Technology Foundation
68. 09/01/12 - 08/31/13 "Collaborative Research: Conceptualizing an Institute For Using Inter-domain Abstractions to Support Inter-disciplinary Applications", National Science Foundation OCI-1216701, (\$1,170,737), with S. Midkiff, D. Padua, K. Pingali, M. Kulkarni, R. Elber, J. Caruthers, A. Prakash, P. H Geubelle, J. Hart, V. Pai.
69. 04/01/14 - 09/30/16 "Global Optimization and Fourier Studies with application to Higher Order Meshing", Sandia National Labs Contract #1439100, (\$498,000)

70. 08/01/15 – 08/31/19 “Mathematical Chemical Imaging with Uncertainty Quantifications”, BioMath (NSF/NIH) R01-GM117594-01, -02, -03 (\$1,539,212) with Pradeep Ravikumar (UT Austin) and Rohit Bhargava (UIUC)
71. 08/01/15 – 08/31/19 “Mathematical Chemical Imaging with Uncertainty Quantifications”, BioMath (NSF/NIH) Supplement, 5R01GM117594 (\$35,750)
72. 08/15/15 – 12/31/17 “A-MOP – Algorithms for Macro-Molecular Pocket Identification”, INESC-ID/University of Lisboa (Portugal)(UTAP-EXPL/QEQ-COM/0019/2014), (\$14,935)
73. 06/06/2016 - 12/31/2017 “Polar Sampling and Optimization of Protein-Ligand Cocystal Structures”, NIH of General Medical Sciences, Small Business Technology Transfer Program, GFREE BIO, LLC, Grant No: 1R41GM116300-01, (\$224,934) with Charles Reynolds (GFREE BIO)
74. 06/01/2016 - 08/31/2017 “Virtual Surgical Atlas: Medical Modeling of the Pediatric Skull”, Dell Medical School, (\$75,140) with Dr. Raymond J. Harshbarger, III, MD, Dell Medical School, Seton Family of Hospitals, OSP# 201602388, Project# CR-14-051

PATENTS

1. Encoding Images of 3-D Objects with Improved Rendering Time and Transmission Process. August 2002, US Patent 6438266

PROGRAM COMMITTEE MEMBER

1. Fourth Annual ACM Symposium on Computational Geometry, Urbana-Champaign, Illinois (1988)
2. HICCS Conference, Emerging Technologies - Simulation and Modeling, Kona, Hawaii (1991)
3. Seventh Annual ACM Symposium on Computational Geometry, New Hampshire (1991)
4. Third IEEE Workshop on Enabling Technologies for Concurrent Engineering, West Virginia (1994)
5. Graphics Interface 1995, Quebec City, Canada (1995)
6. Pacific Graphics 1995, 1996, 1997, 1998, 1999, 2000
7. Implicit Surfaces 1995, 1996
8. Eurographics 1995, 1996
9. IEEE Workshop on Enabling Technologies for Concurrent Engineering, West Virginia (1995, 1996)
10. Workshop on Algorithms and Data Structures (WADS) (1995)
11. Computer Graphics International (1996, 1997, 1998, 1999, 2000)
12. Workshop on Algorithms and Data Structures (WADS), Halifax, Canada 1997
13. IEEE Visualization Conference 1997, 1999
14. Fifth Intl. Conference on Computer-Aided Design and Computer Graphics, Shenzhen, China, December 1997
15. ACM Symposium on Computational Geometry (Theory) Minneapolis, MN, June 1998
16. IMA Math of Surfaces VIII, Birmingham, UK, August 1998
17. ACM SIGGRAPH, 1999
18. Chair, Intl. Symposium on Symbolic and Algebraic Computation (ISSAC) St. Andrew, Scotland, UK, 2000
19. Chair, ACM Annual Symposium on Computational Geometry (Applied Track) 2002
20. Program Committee Chair, ACM Annual Symposium on Computational Geometry, (Applied Track), 2002
21. Co-Chair of Visualization of Large Biomolecular Complexes Workshop, UCSD-Scripps, San Diego, 2006
22. Chair of an NIH Workshop on the Molecular-Cell Project, Austin, TX, 2006
23. International Computer Vision, Graphics and Image Processing (ICVGIP) 2006
24. 5th Workshop on Volume Graphics, (VG 2006), Boston MA
25. Pacific Conference on Computer Graphics and Applications, (PG 2007), Maui, Hawaii
26. Special Year on Algebraic Geometry at the IMA, 2006-2007
27. Geometric Modeling and Processing Conference, (GMP 2008), Hang Zhou, China.
28. ACM Symposium on Solid Modeling and Applications, (SPM 2008), Stony Brook, NY
29. Pacific Graphics, (PG 2008), Tokyo, Japan
30. International Conference on Cyberworlds, (Cyberworlds 2008), Hang Zhou, China
31. Workshop “Medical Imaging Systems”, (EUROMEDIA 2008), Porto, Portugal
32. SIAM/ACM Joint Conference on Geometric and Physical Modeling, San Francisco, 2009
33. Geometric Modeling and Processing (GMP), Castro Urdiales, Spain, 2010
34. UT Austin - Portugal Summer School and Workshop, (CoLab 2010), Coimbra, Portugal

35. Ohio State University, Mathematical BioSciences Institute Workshop on “Analysis and Visualization of Large Collections of Imaging Data”, (with P. Keller, M. Maggioni, A. Tanenbaum), Columbus, Ohio, February 2014
36. Chair of the PhD Admissions Committee, and Member of the Promotions Committee, Computer Science, 2015
37. Mathematics of Soft Matter Minisymposium, Okinawa Institute of Science and Technology (OIST), Okinawa, Japan, January 2016
38. Invited International Member of K1-Centre Consortium review team, “Competence K-1 Center in VrVis Visual Computing, The Austrian Research Promotion Agency, Vienna, Austria, June 2016
39. Member of BIMOS Scientific Advisory Board to assist with further design and development of the BIMOS Program, Berlin, Germany, June 20-21, 2016
40. NIH BD2K Trainee Selection Committee for Computational Sciences, Engineering, Mathematics and Computer Science, 2016
41. Budget Council 2016, Computer Science
42. Member, Selection Panel for Simons Foundation, Simons Investigators in the Mathematical Modeling of Living Systems (MMLS) internal competition, Vice President for Research, September 2016
43. Program Co-Chair, Pacific Graphics 2016, 25th Pacific Conference on Computer Graphics and Applications, (with T. Ertl, T Nishita), Okinawa Institute of Science and Technology (OIST), Okinawa, Japan, October 2016
44. Member, International Program Committee for the 2017 Symposium on Solid and Physical Modeling (SPM 2017), Berkeley, CA, USA, [June 19-21, 2017](#) (see: Member, International Program Committee for the 2017 Symposium on Solid and Physical Modeling (SPM 2017), Berkeley, CA, USA, [June 19-21, 2017](#) (see: <https://s3pm.icsi.berkeley.edu/s3pm/>))
45. Member, International Program Committee for the 2017 Symposium on Visualization (SOV 2017), Bangkok, Thailand, SIGGRAPH ASIA 2017 (<https://sa2017.siggraph.org/attendees/symposium-on-visualization>)

ORGANIZER

1. Special Course on Computational Algebraic Geometry and Geometric Modeling, Fifteenth Annual ACM SIGGRAPH Conference on Computer Graphics and Interactive Techniques, Atlanta, Georgia, 1988
2. Minisymposium on Computational Algebraic Geometry and Geometric Modeling, SIAM Conference on Geometric Design, Tempe, Arizona, 1989
3. Conference on Algebraic Geometry and its Applications, Purdue University, 1990
4. (Co-organizer), Special Course titled Unifying Parametric and Implicit Representations of Surfaces for Computer Graphics, Seventeenth Annual ACM SIGGRAPH Conference on Computer Graphics and Interactive Techniques, Dallas, Texas, 1990
5. Special Session on Algebraic Surfaces in Modeling and Visualization, IMACS 94, Atlanta, Georgia, 1994
6. Special Course titled “Representations of Geometry for Computer Graphics”, Annual ACM SIGGRAPH Conference on Computer Graphics and Interactive Techniques, Orlando, Florida, 1994
7. (Co-Organizer with G. Farin, H. Edelsbrunner), Workshop on Voronoi Diagrams, Triangulations and Splines, Arizona State University, Feb 19 - 21, 1997
8. NIH Workshop on Visualization of Large Biomolecular Complexes, (with A. Olson) August, 2006, The Scripps Research Institute, San Diego, August 2006
9. Minisymposia on Geometry and Analysis, (with T. Hughes), World Congress in Computational Mechanics, Los Angeles, July 2006
10. Minisymposia on Geometry and Analysis, (with T. Hughes and Y. Bazilevs), US National Congress in Computational Mechanics, San Francisco, July 2007
11. MAA/AMS Workshop on Molecular Structure and Function, (with A. Gillette), Washington, DC, Jan 2009
12. COLAB UT-Portugal, Workshop on Biomedical Imaging and Visualization, (with L. Caffarelli, A. Gillette), Austin, Texas, March-April, 2009
13. Ohio State University, Mathematical BioSciences Institute Workshop on “Analysis and Visualization of Large Collections of Imaging Data”, (with P. Keller, M. Maggioni, A. Tanenbaum), Columbus, Ohio, February 2014
14. Program Co-Chair, Pacific Graphics 2016, 25th Pacific Conference on Computer Graphics and Applications, (with T. Ertl, T. Nishita), Okinawa Institute of Science and Technology (OIST), Okinawa, Japan, Jan 2016
15. Co-Organizer, Mathematics of Soft Matter Minisymposium, (with E. Fried, P. Podio-Guidugli), Okinawa Institute of Science and Technology (OIST), Okinawa, Japan, January 2016

OTHER ACADEMIC ACTIVITIES

1. NSF panel member in Numeric and Symbolic Computation, for Small Business Industrial Research Grants, 1989
2. External Ph.D. examiner, Department of Computer Science, 1991
3. Invited panel member, "Toward Multimedia Computing" in the International Conference on Software and Knowledge Engineering, 1992
4. NSF panel member in Numeric, Symbolic and Geometric Computation, for Small Business Industrial Research Grants, 1993
5. IEEE Multimedia Technical Committee Member, 1993 - 1995
6. NSF panel member in Numeric, Symbolic and Geometric Computation, for Small Business Industrial Research Grants, 1994
7. NSF site visitor as part of an NSF-CISE Infrastructure team, 1995
8. MPEG-4 SNHC Geometric Compression Sub-Committee, 1996
9. Associate editor, ACM Transactions on Graphics, 1996 – 2005
10. Associate editor, SIAM Journal on Imaging Sciences, 2007 – 2011
11. Associate editor, International Journal of Computational Geometry and Applications, 1996 - *Present*
12. NSF panel member in New Technologies, 1998
13. Site visit team for Accelerated Strategic Computing Initiatives (ASCI), 1999
14. NSF panel member in Numeric, Symbolic and Geometric Computation, 1999
15. NSF panel member in Experimental Systems, 1999, 2000
16. NSF panel member in Advanced Computational Research, 2000
17. Associate editor, ACM Computing Surveys, 2003 – *Present*
18. Review Panel member, Austrian Science Foundation, 2006
19. Educational Panel Member for the Vietnam Education Foundation research fellowship committee, 2006-2007
20. KAUST Center Director Search Committee, 2008
21. Review Panel member, Austrian Science Foundation, 2008
22. CONSOLIDER Committee, 2008- 2012
23. Member of NIH Molecular Structure Function (MSFD) Computational BioPhysics Study Section, 2009 –2014
24. Member of National Biomedical Computation Resource(NBCR) Advisory Committee, 2010 - *Present*
25. Austrian Science Foundation, 2010
26. Editor, Chapman and Hall ICRC Mathematical and Computational Imaging Sciences Series, 2009 –*Present*
27. Editorial advisory board member of Lecture Notes in Computational Vision and Biomechanics, Springer Verlag, 2010 – *Present*
28. Advisory Board Member, Berlin International Graduate School in Model and Simulation Based Research (BIMoS at Technische University Berlin, Berlin, Germany 2015- *Present*
29. "Computer Science Vs. Cancer", Invited UT Computer Science Alumni Talk, Oct 29, 2015, University of Texas at Austin
30. Invited reviewer for K1-Centre Consortium, "Competence Center in Polymer Engineering and Science (PCCL-K1), for The Austrian Research Promotion Agency, Consortium hearing June 15, 2016, Vienna, Austria
31. Invited guest speaker for 2016 USACM Conference on Isogeometric Analysis and Meshfree Methods, Oct 10-12, 2016
32. NIH BD2K Trainee Selection Committee for Computational Sciences, Engineering, and Mathematics and Computer science, 2016

ELECTED COMMITTEES AT PURDUE UNIVERSITY

1. Member of the 5 year planning committee, 1989
2. Member of the Budget Review committee, 1991
3. Member of the School of Science Faculty Council, 1996

ADMINISTRATIVE POSITIONS AT PURDUE UNIVERSITY

1. Secretary of Faculty, 1988, 1989
2. Chairman of the Science Grade Appeals, 1987

3. Chairman of Undergraduate Committee, 1990
4. Member of the Personnel Committee, 1992
5. Member of the Promotions Committee, 1993 - 1996
6. Member of the Awards Committee, 1993 - 1996
7. Member of the Facilities Committee, 1993, 1996

COURSES TAUGHT AT PURDUE UNIVERSITY

1. CS414 Introduction to Numerical Analysis, Spring 1987
2. CS435 Computer Graphics, Fall 1993, Fall 1994, Fall 1995, Spring 1996, Fall 1996
3. CS482 Introduction to Design and Analysis of Algorithms, Spring 1986
4. CS484 Introduction to Theory of Computation, Spring 1985
5. CS541 Files and Database Structures and Systems, Fall 1984
6. CS572 Introduction to Artificial Intelligence, Spring 1989, Spring 1993
7. CS574 Advanced Computer Graphics, Fall 1989
8. CS580 Design and Analysis of Algorithms, Fall 1985, Spring 1992
9. CS584 Theory of Computation and Computational Complexity, Spring 1988, Spring 1994
10. CS586 Algorithmic Robotics, Fall 1991, Fall 1992, Spring 1996
11. CS590R Geometric Modeling and Motion Planning, Fall 1986, Spring 1988, Fall 1988
12. CS590Z Introduction to Scientific Data Visualization, Spring 1994, Spring 1997

ADMINISTRATIVE POSITIONS AT THE UNIVERSITY OF TEXAS

1. GSSC CAM Admissions Committee (TICAM), 1997-2000
2. CAM Research Fellowship Committee (TICAM), 1997-2002
3. Chair and Infrastructure Committee (TICAM), 1997-2000
4. Festivals and Publicity Committee (CS), 1997-1999
5. HPPC Vision and Strategy Task Force Committee (UT Vice President for Research), 1998-2000
6. Chair Committee (CS), 1998-2000
7. Graduate Admissions Committee (CS), 1998-2000
8. Chair Recruiting Committee (CS), 2000-2001
9. Faculty Evaluation Committee (CS), 2000-2002 (Chair, 2001-2002)
10. Chair Recruiting Committee (TICAM), 2000-2002
11. Computational Applied Mathematics, GSSC (TICAM), 2000-2002
12. CISE Committee (CS), 2004-2007
13. Faculty Recruitment Committee for Imaging Resources Center, 2005-2006
14. Search Committee for ICES Chair in Life Sciences, Chair, 2005-2006
15. ICES Advisory Board, 2005 – 2008
16. JTO Fellowship Award Committee (ICES), 2005 - 2008
17. CAM Graduate Studies Committee (ICES), 2006-2007
18. ICES Board of Advisers, 2008
19. GSC (CS), 1997 - Present
20. GSSC (ICES), 1997- Present
21. GSC (EE), 2000 - Present
22. GSC (Biomed), 2004 - Present
23. GSC (ICMB), 2005 - Present
24. GSC (Neurosciences), 2007 - Present
25. GSC (Mathematics), 2007 - Present
26. Neurosciences Graduate Curriculum Committee (Neurobiology), 2007 - Present
27. Faculty Recruiting Committee (CS), 2007 - 2008
28. Master Admissions Committee (CS), 2008 - 2010
29. Institute of Neurosciences Executive Committee, 2008 - 2012
30. SBES/Moncrief Search Committee on Molecular Sciences, 2009 - 2010
31. SBES/Moncrief Search Committee on Cardiovascular Engineering, 2009 - 2010
32. ICES Core Course B Curriculum Committee, 2009 – 2010

33. VP of Research representative to UT's International Oversight Committee, 2010-2011
34. Member of the Hamilton Book Awards Committee, 2013-2014
35. Doctoral Admissions Committee, 2013-2014, 2015-2016
36. Interdisciplinary Hiring Ad Hoc Committee, 2014-2015
37. Faculty Promotions Committee, Computer Science, 2015-2016, 2016-17
38. Moncrief Data Analytics Search Committee, 2016-17
39. Ad Hoc Budget Council for Alex Huth, 8/2017 -2018
40. CS Peer Evaluation for Etienne Vouga, April 2017
41. BD2KT32 Admissions Committee, Spring 2017
42. TOTAL High Performance Computing Group - Campus Visit Feb. 2

COURSES TAUGHT AT THE UNIVERSITY OF TEXAS

1. CS395T, Graphics, Modeling, Visualization, Fall 1998, Spring and Fall 1999, Spring and Fall 2000, Spring 2002
2. CS395T, Physically Based Geometric Modeling, Fall 2002
3. CS395T Multi-Scale Bio-Modeling and Visualization, Fall 2005, Fall 2006
4. CS354/BME 345, Intro. to Computer Graphics, Fall 1999, Spring 2001, Fall 2003, Spring 2004, Fall 2005, Fall 2006, Fall 2007, Fall 2008, Spring 2010, Fall 2010, Fall 2013, Spring 2014
5. CS384G/CAM 395T, Computer Graphics, Spring and Fall 1999, Fall 2000, Fall 2007, Fall 2008
6. CS384R, Geometric Bio-Modeling and Visualization, Fall 2007, Fall 2008, Fall 2010, Fall 2013
7. CSE 383M/CS 395T, "Statistical and Discrete Methods for Scientific Computation / Bioinformatics" Spring 2015
8. ARC350R/ARC386M/CS378 "BIO-(In)formatic Architecture Modeling in Architectural Design", Spring 2016
9. CS378 Geometric Foundations of Data Sciences, Fall 2017
10. CS383M Statistical and Discrete Methods for Data Analysis, Spring 2018

Ph.D. STUDENTS

Completed Ph.D. Students (Chair)

1. Myung-Soo Kim, December 1988, (Professor Seoul National University, Seoul, Korea)
2. Tamal Dey, August 1991, (Professor Ohio State University, USA)
3. Insung Ihm, August 1991, (Professor Sogang National University, Seoul, Korea)
4. Andrew Royappa, December 1992, (Professor Mississippi State University, USA)
5. Vinod Anupam, June 1994, (Senior Research Scientist, Google Inc, Mountain View, USA)
6. Jindong Chen, December 1995, (Senior Research Scientist, Google Inc, Mountain View, USA)
7. Fausto Bernardini, December 1996, (Senior Research Scientist, IBM Research Yorktown Heights, USA)
8. Kwun-nan Lin, December 1996, (Private Entrepreneur, Taipei, Taiwan)
9. Dan Schikore, August 1997, (Senior Research Scientist, CEI International, North Carolina, USA)
10. Peinan Zhang, December 1997, (Research Scientist, SUN Microsystems, California, USA)
11. Guozhong Zhang, May 1999, (Research Scientist, Intel Research, Portland, USA)
12. Steve Cutchin, August 1999, (Director, San Diego Super Computer Visualization Center,)
13. Valerio Pascucci, May 2000, (Professor, University of Utah, Salt Lake City, UT)
14. Susan Evans, August 2001, (Research Scientist, Xerox Corporation, California, USA)
15. William Blanke, December 2001, (Professor University of Fiji, Fiji Island)
16. Xiaoyu Zhang, December 2001, (Professor of California State University, California,)
17. Bong-Soo Sohn, August 2005, (Professor of Kyungpook National University, Daegu, Korea)
18. Yongjie Zhang, August 2005, (Assistant Professor at Carnegie Mellon University)
19. Zeyun Yu, August 2006, (Assistant Professor, University of Wisconsin, Milwaukee, WI)
20. Sangmin Park, December 2006 (Research Scientist, Siemens Research Center, Princeton, NJ)
21. Vinay Siddhanavalli, December 2006 (Research Scientist, Google Inc, Mountain View, CA)
22. Wenqi Zhao December 2008 (Research Instructor, Bowling Green University)
23. Shun Chuan "Albert" Chen, December 2009 (Research Scientist, Google Inc, Mountain View, CA)
24. Andrew Gillette, May 2011 (PostDoc, University of California, San Diego, CA)
25. Radhakrishna Bettadapura August 2012 (Research Scientist at Strand Life Sciences)
26. John Edwards, May 2013 (Postdoctoral Fellow, University of Utah)

27. Muhibur Rasheed, August 2014 (Postdoctoral Fellow, University of Texas, Austin)

Ph.D. Students in Progress (Chair)

Nathan Clement, 2014- ; Soumyajit Gupta, 2014 - ; Richard Teammco, 2015 -; Kevin Song 2016 - ; Louis Long Ly 2016 -; Noah Anderson 2016 -; Amelia Henriksen 2017 -; Yi Wang 2017 - ; Jialin Wu 2017 -;

POST-DOCTORAL STUDENTS

Completed Post-Docs

Dr. Sanghun Park 1998-2000 (Currently Professor at Dongguk University, Seoul, Korea)
Dr. Ariel Shamir 1999-2001 (Currently Professor at Herziliya University, Israel)
Dr. Julio Castrillon-Candas 2003-2005
Dr. Yongjie Zhang 2005-2007 (Currently Professor at Carnegie Mellon University)
Dr. Samrat Goswami, 2006 – 2008 (Currently at CAD , Boston)
Dr. R. Inkulu, 2007 – 2008
Dr. Wenqi Zhao, 2008 – 2009 (Currently Assoc. Professor at Michigan State University)
Dr. Cliff Rumsey, 2008 – 2010
Dr. Rezaul Chowdhury, 2007 – 2010 (Currently Asst. Professor at StonyBrook University)
Dr. Alex Rand, 2009 – 2012 (Currently Research Scientist at CD Adapco, Austin, Texas)
Dr. Qin Zhang, 2008 – 2012 (Currently Research Scientist at Houston)
Dr. Deukhyun Cha, 2010 – 2013 (Currently Research Scientist at Houston)
Dr. Ahmad Rushdi 2014 – 2016 (Currently Research Scientist at Sandia National Lab.)
Dr. Muhibur Rasheed 2014-2015 (Currently Research Scientist at CD-Adapco, Austin, Texas)

Completed MS STUDENTS (Chair)

Katherine Clarridge, (BME), May 2006
Alex Mollere, (CAM), May 2009
Jesse Sweet, (Math), May 2008
Bharadwaj Subramaniam, (CAM), May 2010

UNDERGRADUATE RESEARCH STUDENTS (Chair)

Completed Students (Chair)

Nona Sirakova (CS) August 2012
David Moench (CS), August 2014
Suchith Vuppala (CS), May 2014
Pragati Prasad (CS), August 2014
Holim Lee (CS)
Huijin Kim (CS)
Chetan Kumar, (BME)
Keerthana Kumar (CS)

MEMBER OF MS/PhD Committee

Peter March of ME, (Ph.D. chair Dr. Delbert Tesar)
Darlan Girao of Math, (Ph.D. Chair Dr. Alan Reid)
Yul Young Park, INS (Ph.D. chair Dr. Dan Johnston)
Ming Ming Wu, Neurobiology (Ph.D. Chair Dr. Harold Zakon)
Rui Mao, CS (Ph.D. Chair Dr. Dan Miranker)
Matthew Alden, CS, (Ph.D. chair Dr. Risto Mikkulainen)
Ligang Long, Math, (Ph.D. chair Dr. Dr. Cameron Gordon)
Ann M. Clemens, Neuroscience (Ph.D. Chair Dr Daniel Johnston)

James Delfeld (Ph.D. Chair Dr. Ronald Hadani)
Itamar Gal (Ph.D. Chair Dr. Rachel Ward)

SUPERVISION/TRAINING OF SUMMER INTERNS

Andre, Nuno (2010), Ana Jantadarna (2011), Thomas Kelleher (2012,2013), Bruno Araújo, José Ricardo Ribeiro , Joao Silva and Tiago Martins , Bruno da Silva, Jorge Oliveira (2014), Filip Drowsdowski (2014), Jialin Wu (2016), Amisha Jhanji (2016), Abinav Chandar (2016), Zachary Walters (2016 with Dr. Danelle Briscoe, Architecture), KAUST Gifted Summer Research Program, July 12 - August 11, 2016: Rawan Al Yahya, Sara Alshaik Hussain, Khuzam Al Shubbar (2016); Young Min Kim Visiting Research Scholar (June 28, 2016-February 28, 2018); Moncrief Undergrad Summer Intern-Stephen Davis Owen (June 5-Aug 11, 2017); Xiaolong Zhang, Visiting Researcher Scholar, China; Arjun Karpur, (2017); Zhou Lu (Peking math, June 27, 2017-?) Summer internship; Zihao Wei (July 1-?, 2017) Summer internship; Yufeng Zhang (USTC math, July 1-?, 2017); Haosuo Huang, summer internship; Zhicheng Gu, summer internship; Xi Ye, summer internship;

INVITED CONFERENCE/WORKSHOP/ KEYNOTE PRESENTATIONS

1. "Applying Galois Methods to Geometric Optimization Problems", SIAM Conference on Geometric Modeling and Robotics, Albany, New York, July 1985
2. "Generalized Unfoldings for Shortest Paths", SIAM Conference on Geometric Modeling and Robotics, Albany, New York, July 1985
3. "Efficient Generation of Conguration Spaces", Army Robotics Workshop, Rennselear, Troy, New York, June 1986
4. "Automatic Rational Parameterization of Curves and Surfaces", Army Robotics Workshop, Rennselear, Troy, New York, June 1986
5. "The Parameterization of Rational Curves and Surfaces", Computers and Mathematics Conference, Stanford, California, July 1986
6. "Geometric Modeling Research, Computer Aided Manufacturing", International, Geometric Modeling Group, San Jose, California, January 1987
7. "Genus is a Birational Invariant", Midwest Theory Conference, University of Illinois, Urbana, Illinois, April 1987
8. "Algorithmic Implicitization and Parameterization: The Known and the Unknown", Research Conference on Geometric Design, Detroit, Michigan, May 1987
9. "Algebraic Methods in Geometric Modeling, Computer Aided Manufacturing", International Geometric Modeling Group, Boston, Massachusetts, May 1987
10. "Geometric Modeling Research", Tata Research and Development Center, Pune, India, June 1987
11. "Geometric Modeling and Robotics", Computer Maintenance Corporation, Hyderabad, India, June 1987
12. "Motion Planning with Algebraic Objects", First International Conference on Industrial and Applied Mathematics, ICIAM'87, Paris, France, June 1987
13. "Genus is a Birational Invariant: Parameterizing Algebraic Space Curves", SIAM Conference on Applied Geometry, Albany, New York, July 1987
14. "Convex Decompositions and Gaussian Approximations of Curved Objects", SIAM Conference on Applied Geometry, Albany, New York, July 1987
15. "Algorithms for Algebraic Curve and Surface Parameterization" workshop on Algebraic Computational Geometry, Bellairs Research Institute of McGill University, Hometown, Barbados, 1988
16. Workshop on Algorithmic Aspects of Geometry and Algebra, Mathematical Sciences Institute, Cornell University, Ithaca, NY, 1988
17. Invited keynote speaker, Third IMA Conference on the Mathematics of Surfaces, Keble College, Oxford University, 1988
18. ONR Workshop on Geometric Design, Moscow, Idaho, 1989
19. Special Session on "Mathematical Questions in Computational Geometry", American Mathematical Society, Boulder, Colorado, 1989
20. Workshop on Practical Issues in Computational Geometry, DIMACS, Princeton University, Princeton, 1990

21. Workshop on Algebraic Issues in Computational Geometry, DIMACS, Princeton University, Princeton, 1990
22. Invited speaker at I.CO. GRAPHICS'91 Conference in Milan, Italy, February 1991
23. Special Year on Symbolic Computation at the Nankai Institute of Mathematics, Tianjin, China, April 1991
24. Dagstuhl-Seminar on Algorithmic Geometry, Saarbrücken, West Germany, October 1991
25. Curves and Surfaces in Computer Vision and Graphics II, SPIE Conference, Boston, MA, November 1991
26. "Multivariate Interpolation and Approximation", Presentation, 7th Texas Approximation Theory Conference, Austin, Texas, January 1992
27. "Experiments in Distributed and Collaborative Design", DARPA workshop on Manufacturing, Salt Lake City, Utah, January 1992
28. "Algebraic Surface Design and Finite Element Meshes", Presentation, NASA Workshop on Software Systems for Surface Modeling and Grid Generation, Langley Research Center, Hampton, Virginia, April 1992
29. "Parameterization in Finite Precision", Presentation, Graphics Interface '92, Vancouver, British Columbia, Canada, May 1992
30. "Multimedia Computing (What now in User Interfaces)", Invited Presentation at a Panel, Fourth International Conference on Software Engineering and Knowledge Engineering, Capri, Italy, June 1992
31. "Implicit Algebraic Splines and Applications", Tenth Army Mathematics Conference, West Point, New York, June 1992
32. "Generalized Hermite Interpolation for Algebraic Varieties", Invited Presentation, International Workshop on Mathematics Mechanization, Institute of System Sciences, Beijing, China, July 1992
33. International Workshop on Algebraic Approaches to Geometric Reasoning, RISC-LINZ, Austria, August 1992
34. International Conference on Computer Graphics, Bombay, India, February 1993
35. Dagstuhl-Seminar on Computational Geometry, Saarbrücken, West Germany, March 1993
36. "Virtual Reality and Virtual Environments", ONR Workshop, Research Triangle Park, North Carolina, May 1993
37. Siggraph 1993 Course on Implicit Surfaces, Anaheim, California, August 1993
38. Minisymposia at 1993 SIAM Conference on Geometric Design, Tempe, Arizona, November 1993
39. International Conference on Computer Aided Geometric Design, Penang, Malaysia, July 1994
40. Workshop on "Human-Computer Interaction and Virtual Environments", University of Virginia, Hampton, VA, May 1995
41. "Mathematics of numerical analysis: real number algorithms", SIAM, Park City Utah, July 1995
42. Annual Pacific Graphics Conference, Seoul, Korea, August 1995
43. Minisymposium on Surface-on-Surfaces at the Geometric Design Conference, Nashville, Tennessee, November 1995
44. "Modeling Surfaces and Associated Fields" Dagstuhl-Seminar on Geometric Modeling, Schloss Dagstuhl, West Germany, May 1996
45. Invited Talk on "High Performance Scientific Computing" (C3AD), Brazil, July 1. 1996
46. Course on "Representations of Geometry", SIGGRAPH 96, New Orleans, July 1996
47. Course on "Implicit Surfaces", SIGGRAPH 96, New Orleans, July 1996
48. Canadian Conference on Computational Geometry, Ottawa, Canada, August 1996
49. IMA Conference on the Mathematics of Surfaces, Dundee, Scotland, UK, September 1996
50. "Progressive Compression of Arbitrary Triangular Meshes", Conference on Hierarchical Methods in Computer Graphics, Dagstuhl-Seminar on Scientific Visualization, Schloss Dagstuhl, West Germany, May 1997
51. Minisymposium on Reverse Engineering, Conference on Computer Aided Geometric Design, Lillehammer, Norway, July 1997
52. IMACS conference on Problem Solving Environments Berlin, Germany, August 1997
53. Invited Speaker at the Laredo Course on Applications of Symbolic Computing, Laredo, Spain, September 1997
54. Invited Speaker for a Tutorial at Eurographics '97, Budapest, Hungary, September 1997
55. Invited Speaker "Hierarchical Free Form Modeling Using A-patches", Dagstuhl Germany, Workshop on Hierarchical Methods in Computer Graphics, Dagstuhl Germany, November 1998
56. Conference on Computer Aided Geometric Design, , ETH Zurich, "Multi Resolution Modeling & Visualization", July 1998
57. Invited Speaker for the Conference on New Themes in Computer Aided Geometric Modeling, Tel-Aviv, Israel, February 1998
58. Invited Speaker "Freeform Modeling on Vector Fields for Interrogative Visualization", Oberwolfach Germany, Conference on Free Form Surfaces, at the Mathematisches Forschungsinstitut Oberwolfach Seminar , June 1998
59. Invited Speaker NSF Large Data Visualization Workshop, Salt Lake City, UT, "Terascale Visualization", May 1999

60. Invited Speaker "Vector Topology in Geometric Modeling and Visualization", Symbolic Numeric Computation Conference, Hagenberg, Austria, August 1999
61. Invited Speaker , Conference on Algebra and Algebraic Geometry with Applications, "Abhyankar Festschrift", Purdue University, Lafayette, Indiana, June 2000
62. Invited *Keynote* Presentation "Higher Performance Visualization", First SIAM Conference on Computational Science & Engineering, Washington, DC, September 2000
63. Panel Presentation, "The Transfer Function Bake-Off Challenge", IEEE Visualization Conference, Salt Lake City, UT, October 2000
64. Panel Presentation "The Next Steps in Scalable Visualization", NPACI, All Hands Meeting, San Diego, CA, February 2001
65. UC San Diego - Advisory Member of Dr. Mark Ellisman's National Center on Microscopy Research, San Diego, CA, April 2001
66. Invited Speaker, "Subdivision Based Finite Element Solution of Anisotropic Diffusion Equations", IMA Workshop on Geometric Modeling, Minneapolis, MN, April 2001
67. Invited Speaker, "Scalable Rendering on COTS Clusters", IMA Workshop on Computer Graphics, Minneapolis, MN, May 2001
68. Invited Speaker, "Remote Visualization", TEXGRAPH 01, Houston, TX, May 2001
69. Invited Speaker, "Anisotropic Diffusion in 3D Image Processing", IPAM Workshop on Geometric Diffusion and Image Processing, Los Angeles, CA, May 2001
70. Invited Speaker, "Geometry Processing and Visualization in Hierarchical Modeling in Heterogeneous Materials", Sandia National Lab, Project Grantee Workshop, Albuquerque, NM, May 2001
71. Invited Speaker on "High Performance Visualization Techniques", WSCG2002 Conference, Plzen, Czech Republic, February 2002
72. Invited Speaker, "Algebraic Geometry of Molecular CAD", Symbolic Computation Workshop, Catania, Italy, March 2002
73. Invited Speaker on "Algebraic Geometry Computation and Applications", Workshop, Hefei, China, April 2002
74. Invited Speaker on "Active Visualization", Eurographics Workshop on Virtual Environments, Barcelona, Spain, May 2002
75. Invited Speaker on "Molecular Modeling and Visualization" Gordon Conference on Diffraction Methods, Connecticut, July 2002
76. Invited Speaker on "Molecular Modeling and Visualization" IUCR World Congress on Crystallography, Geneva, Switzerland, August 2002
77. Invited *Keynote* presentation, "Volumetric Filtering Modeling and Visualization for Nano-Medicine", Eurographics 2003, Granada, Spain
78. Invited Presentation "Quantitative Visualization of Static and Dynamic Macromolecular Complexes", Workshop on Visualization of Large Macromolecular Complexes, Berkeley, CA, October 2003
79. Invited Altenberg Lecture "Visual Representations in Biology", Konrad Lorenz Institute of Theoretical Biology, Vienna, Austria. February 2004
80. Invited McGovern Lecture "Image Processing and Visualization for Structural Biology", University of Texas Health Sciences, Houston. February 2004
81. Invited Presentation, "Cubic A-Patches and Twenty Seven Lines on a Cubic", Algebraic Geometry and Geometric Modeling Workshop, Science Research Institute, Berkeley, California. April 2004
82. Invited Talk, "Flexible Chain Complex Models for Cryo-EM Maps and Atomic Macromolecular Structures", Scripps Research Institute, San Diego. April 2004
83. Invited Speaker, "Quality Meshing of Large Biomolecular Complexes", Japan Society of Industrial and Applied Mathematics, Tokyo. September 2004
84. Invited Speaker "Ultrastructure Elucidation from 3D Electron Microscopy at the Gordon Conference in 3D Electron Microscopy, New London, New Hampshire, July 2005
85. Invited Presentation on "Ultrastructure Elucidation from 3D Electron Microscopy", Computational Structural Biology, Data Mining Workshop, Stanford University, Stanford, August 2005
86. Invited Talk on "Visualization of Large Biomolecular Complexes", Workshop, UCSD-Scripps, September, 2005
87. Invited Colloquium on "Geometric and Signal Processing of 3D Electron Microscopy", Courant Institute, New York University, October 2005
88. Invited Jacques Morgenstern Colloquium on "Geometric and Signal Processing for Biomolecular Interactions", INRIA- Sophia Antipolis, France, April, 2006

89. Invited Talk on “Geometric and Signal Processing for 3D Electron Microscopy”, The IMA Workshop on Imaging Science, Minneapolis, May 2006.
90. Invited Minisymposium on “Efficient Computation of Molecular Surfaces, Energetics, Forces”, Minisymposium at World Congress on Computational Mechanics, Los Angeles, July 2006
91. Invited Talk on “Static and Time Dependent Meshing from Imaging”, Annual Meeting of the National Bio-Medical Center, San Diego, August, 2006.
92. VEF Review, Hanoi, Invited Talk on "Computer Science Research in Computational Biology", September 2006
93. Invited Talk on “Algebraic Geometric Methods in Engineering”, IMA Conference, Minneapolis, September 2006
94. Invited *Keynote* Presentation on “In Silico Methods in Cellular Engineering”, 24th Annual HSEMB Conference, Houston, February 2007
95. Invited Colloquium on “Applications of Approximation Theory”, International Conference in Approximation Theory, San Antonio TX, March 2007
96. Invited Talk on “Flexibility of Virus Capsids Via Elastic Models”, NRP Workshop on “Mathematical Models for Materials Science”, Rome, March 2007
97. Invited Minisymposium Presentation on “Automatic Structure Interpretation of single particle Cryo-Electron Microscopy: From Images to Psuedo-Atomic Models” 2007 IEEE International Symposium on Biomedical Imaging, from Nano to Macro, Washington, DC, March 2007, <http://tinyurl.com/PMC2678009>, PMID: PMC2678009
98. Invited Talk on “Fast Algorithms for Protein-Protein Energetic Interactions”, Workshop on Macro-Molecules and Proteins, Lincei Academy, Rome, March 2007
99. Invited *Keynote* titled “Molecular Structure and Properties Elucidation from 3D Electron Microscopy” at the Multi-Scale Imaging “Gulliver” Workshop, LBNL, Berkeley, CA, May 2007.
100. Invited Talk on “Algebraic Splines for Molecular Modeling”, IMA Annual Workshop, St. Paul, Minnesota, May 2007
101. Invited Talk on “Visualizing Physical Phenomena Using Interactive Media”, Gordon Research Center, Smithfield Rhode Island, July 2007
102. Invited *Keynote* Talk on “Cardiovasculature Modeling and Visualization”, USNCCM 9th Annual Congress, San Francisco, July 2007
103. Invited Minisymposium Presentation “Viral Capsids as Deformable Shells”, for Tinsley Oden’s 70th Birthday Minisymposium, USNCCM 9th Annual Congress, San Francisco, July 2007
104. Invited Minisymposium Talk on “Algebraic Splines and Analysis”, USNCCM 9th Annual Congress, San Francisco, July 2007
105. Invited Minisymposium Presentation on “Union of Algebraic Spline Models”, SIAM Conference on Geometric Design, San Antonio, November 2007
106. Invited Talk “Molecular Electron Microscopy to Biophysical Modeling and Analysis”, Workshop on Image Analysis Challenges in Molecular Microscopy, IPAM-UCLA, Los Angeles, January 2008
107. Invited Plenary Talk, “Geometric Flow for Quality Surface/Volumetric Modeling”, 1st Workshop on Computational Engineering and Fluid Dynamics, Lisbon, Portugal, July 2008
108. Invited Plenary Talk, “Modeling Two Phase Flow Dynamics for Deformable Interfaces in Biology”, 1st Workshop on Computational Engineering and Fluid Dynamics, Lisbon, Portugal, July 2008
109. Invited Minisymposium Talk, “Multiscale Molecular Modeling for Drug Discovery”, SIMAI Conference, Rome Italy, September 2008
110. Invited Minicourse on “Computational Structural Biology”, Chinese Academy of Sciences, Beijing, February 2009
111. Invited talk, “Mathematics/Computer Sciences and Art”, Dean’s Advisory Council, March 2009
112. Invited talk, “Characterizing Electromagnetic Molecular Interaction Force Fields Using the Hodge Decomposition”, ACE (Advanced Computational Electromagnetics) 2009, Rome, April 2009
113. Invited Minicourse on “Molecular Modeling for Simulations”, University of Cantabria, Santander, Spain, May 2009
114. Invited *Keynote* talk, “Spatially Realistic CAD from Multi-Scale Bio-Imaging”, CAD Conference, Reno, NV, July 2009
115. Invited Plenary talk, “Variational Higher-Order Level-Set Methods for Image Segmentation”, Image Segmentation in Materials Science Conference, Pittsburgh, PA, November 2008
116. Invited talk, “Discovering Natures Gadgets and Gizmos”, at Workshop in Honor of John Hopcroft's 70th Birthday, Cornell University, Ithaca, New York, October, 2009

117. Invited *Keynote* Speaker, “Nature’s Forces for Molecular Recognition: models and Computation”, at the International Conference on Physics/Biology Interface, Saha Institute of Nuclear Physics, Kolkata, India, December 2009
118. Invited talk “Cohomology Stability Criteria for Mixed Finite Elements”, Conference celebrating the 60th birthday of Tomas Recio, Castro Urdiales, Spain, May 2010
119. Invited *Keynote* Speaker “Spatially Realistic Multiscale Modeling from Electron Microscopy”, CompIMAGE 2010, Buffalo, NY, May 2010
120. Invited Workshop Talk, "Computational Analysis of Protein Interactions for Drug Discovery", 2nd Collaboration Meeting on Applications of Theoretical Physics Methods in Biology, ECT Institute, Trentino, Italy, June 2010
121. Invited talk, “Algebra and Geometry of Algebraic Finite Elements”, Conference on Algebra and Algebraic Geometry with Applications: Celebration of the 80th Birthday of Professor Shreeram Abhyankar, Purdue University, July 2010
122. Invited colloquial talk, “Solubility by Radicals and Monodromy of Riemann Surfaces”, Conference celebrating the 80th birthday of Prof. Abhyankar, Pune University, December 2010
123. Invited *Keynote* talk “Computational Mathematics for Protein-Protein Interactions”, ACM/SIAM Solid Physical Modeling Conference, 2010, Haifa, Israel, August 2010
124. Invited talk, “Computational Analysis of Protein Interactions for Drug Discovery”, 2010 Austin-Portugal International Collaboratory for Emerging Technologies (COLAB), Lisbon, Portugal, September 2010
125. Invited talk, “Computational Analysis of Protein Interactions for Drug Discovery”, Meeting on Modeling of Protein Interaction (MPI), Lawrence, Kansas, October 2010
126. Invited Plenary speaker at the 2010 Visions of Computing Lecture Series, Computer Science UT Austin, November 2010
127. Invited participant and presenter, “Computational Analysis of Protein Interactions for Drug Discovery”, the National Academies Keck Futures Initiative Conference on Seeing the Future with Imaging Science, Irvine, CA, November 2010
128. Invited talk, “Variational Methods for 3D Reconstruction in Electron Microscopy”, Sampling and Reconstruction: Applications and Advances workshop at the Banff International Research Station for Mathematical Innovation and Discovery (BIRS), Vancouver, British Columbia, Canada December 2010
129. Invited talk, “Variational Geometry and Differential Topology Approaches to Structure Modeling from 3D EM Maps”, Workshop on Structural Biology, Pacific Symposium on Biocomputing, Waimea, HI, January 2011
130. Invited talk, “Computational Molecular Biology, Modeling, and Visualization”, IAMCS Visualization in Biomedical Computation Conference, Texas A&M University, College Station, Texas, February 2011
131. Invited talk “Geometric Modeling and Analysis of Protein Complexes Using Algebraic Splines”, Conference held on Geometric Modeling at Schloss Dagstuhl Leibniz-Zentrum Fur Informatik, Dagstuhl, Germany, May 2011
132. Invited *Keynote* speaker, “Computational Molecular Biology: Drug Discovery”, Ninth Eurographics Symposium on Geometry Processing (SGP-2011), Lausanne, Switzerland, July 2011
133. Invited talk, “Automating the Visualization of Biological Machines”, IEEEJ Autumn Conference on Basic and New Development in Visual Computing, University of Tokyo – Komaba Campus, September 2011
134. Invited SIAM minisymposium presentation, “Quality Hexahedral Reparameterization”, SIAM Geometric Design and Solid /Physical Modeling Conference, Orlando, Florida, October 2011
135. Invited SIAM minisymposium presentation, “Harmonic Analysis for Protein-Protein Docking”, SIAM Geometric Design and Solid /Physical Modeling Conference, Orlando, Florida, October 2011
136. Invited SIAM minisymposium presentation, “Computational Challenges in Bio-Nano-Technology”, SIAM Geometric Design and Solid /Physical Modeling Conference, Orlando, Florida, October 2011
137. Invited *Keynote* Speaker, “Quantitative Visualization in the Computational Biological Sciences”, IEEE Pacific Visualization 2012, Songdo, Korea, February 2012
138. Invited Speaker, Biomedicine in 4D Conference “Statistical Verification and Validation of Drug Targets using 3DEM”, Oregon Health and Science University, March 2012.
139. Invited Speaker, “Automating the Visualization of Biological Machines”, Experimental Biology 2012, San Diego, California, April 2012
140. Invited *William Mong Distinguished Lecture*, “Computational Challenges in Accelerated Drug Discovery”, Hong Kong University, Hong Kong, May 2012
141. Invited Speaker, “Variational Methods in Molecular Electron Tomography”, SIAM Conference on Imaging Science, Philadelphia, Pennsylvania, May 2012
142. Invited *Keynote* Speaker, “Quantitative Visualization in the Biological Sciences”, International Conference on Contemporary Computing, IC3, New Delhi, India, August 2012

143. Invited Speaker, “Enhancing Visualization of Multi-scale Biophysical Simulations”, Conference on Computational Physics, Kobe, Japan, October 2012
144. Invited Speaker, “Images to Function: Multiscale Modeling of Electrophysiology in the Hippocampus”, Turning Images to Knowledge: Large-Scale 3D Image Annotation, Management, and Visualization, Janelia Farm, Virginia, October 2012
145. Invited Talk, “Multi-Protein Docking”, Modeling of Protein Interactions MPI 2012, University of Kansas, Lawrence, Kansas, November 2012
146. Invited Talk, “Images to Function: Multi-scale Modeling of Electrophysiology in the Hippocampus”, Modeling and Simulations of Physiological Systems, Technico Lisboa, Lisbon, Portugal, December 2012
147. Invited Speaker, “Computational Science Challenges for the 3D Virtual Cell”, University of California, San Diego, California, December 2012
148. Invited talk, “Geometric Modeling Tales Born from Two Sciences: Algebra & Geometry”, *Algebraic Geometry and Geometric Modeling* workshop at the Banff International Research Station for Mathematical Innovation and Discovery (BIRS), Vancouver, British Columbia, Canada, January 2013
149. Invited Talk, “Modeling, Analysis and Validation of Molecular Interactions from Electron Microscopy”, Advanced Imaging Methods Workshop, UC Berkeley, California, January 2013
150. Invited *Keynote* Speaker, “The Geometry and Analysis of Biological Machines”, Advances in Computational Mechanics, Celebrating the 70th Birthday of Thomas J.R. Hughes, February 2013
151. Invited Speaker, “Modeling Analysis and Validation of Molecular Interactions from X-ray and Electron Microscopy”, Mathematical Challenges in Biomolecular/Biomedical Imaging and Visualization Workshop, Mathematical Biosciences Institute, Ohio State University, February, 2013
152. Invited *Keynote* Speaker, “Data Enabled Molecular Modeling, Uncertainty Quantification and Visualization,” 2013 NSF CyberBridges Workshop, July 2013
153. Invited *Keynote* Speaker, “Multi-domain Meshing Challenges for Scalable Biophysical Simulations,” 22nd International Meshing Roundtable Conference, October 2013
154. Invited Distinguished Speaker, “Multi-domain Meshing Challenges for Scalable Biophysical Simulations,” Barr Systems Distinguished Lecture Series, University of Florida, Gainesville, Florida, October 2013
155. Invited Distinguished Speaker, “Automated Prediction of Molecular Assemblies with Quantified Uncertainty,” Carnegie Mellon University, November 2013
156. Invited Speaker, “Automated Prediction of Molecular Assemblies,” 2nd Zing Conference on Protein and RNA Structure Prediction, December 2013
157. Invited Distinguished Speaker, “Automated Prediction of Molecular Assemblies with Quantified Uncertainty,” Colloquium Seminar at the University of Virginia, January 2014
158. Invited Speaker, “Computational Topology, Geometry, and Analysis for Quantitative Relationships Between Biological Form and Function from 3D Electron Microscopy,” MBI-OSU, Analysis and Visualization of Large Collections of Imaging Data Workshop, April 2014
159. Invited Speaker, “Imaging and Modeling in Electron Microscopy—Recent Advances”, Banff International Research Station, Workshop, May 2014
160. Invited Speaker, “Macro-molecular Map and Model Refinement Techniques for Electron Microscopy”, Workshop on Imaging and Modeling in Electron Microscopy: Recent Advances, Banff International Research Station for Mathematical Innovation and Discovery, May 2014
161. Invited *Keynote* Speaker, Okinawa Institute of Science, Technology Workshop on Quasi-Symm. Assemblies (Jan 2015)
162. Invited *Keynote* Speaker, “Chemical Imaging and Visualization with Uncertainty Quantification” Computer Methods in Biomechanics and Biomedical Engineering Imaging and Visualization, CMBBE (Sep 2015), Montreal, Quebec, Canada
163. Invited Banquet talk, “Nature’s Meshes, Models and Simulations”, 24th Intl. Meshing Roundtable IMR 2015, Sandia Nat’l Laboratories, The Bullock Texas State History Museum, University of Texas, Austin, Texas, October 13, 2015
164. Invited Alumni Banquet Lecture, “Computer Science versus Cancer”, Computer Science Alumni, University of Texas at Austin, Austin, TX, October 29, 2015
165. Invited Speaker, “Scalable Global Optimization Problems in Imaging and Geometry Processing”, Workshop for Joint Research Exchange between University of Aachen (AICES) and University of Texas (ICES), Aachen, Germany, Nov 5-6, 2015

166. Invited Plenary Lecture, “Statistical Bio-Modeling for Predictive Medicine”, UT Austin/Portugal CoLab-Advanced Computing Research, Innovative Modeling Techniques for Predictive Medicine Workshop, Nov 9-13, 2015, IST, Lisbon, Portugal
167. Invited Colloquium Speaker, “Fast, Approximate and Scalable Geometric Optimization”, for Mathematics Colloquium at University of Arizona, April 14-16, 2016, Tucson, Arizona
168. Invited Colloquium Speaker, “Scalable Geometric Optimization with Applications to Prediction of Assemblies”, TU Berlin (Technische Universität Berlin), June 21, 2016, Berlin, Germany
169. Speaker, “Disk Density Tuning of a Maximal Random Packing”, The International Geometry Summit 2016 (IGS), Solid and Physical Modeling (SPM), Technische Universität Berlin, June 22, 2016, Berlin, Germany
170. Invited Speaker, “Algebra and Geometry of Reproducing Hilbert Space Kernels” at Banff International Research Station-Casa Matematica Oaxaca, Computational Algebra and Geometric Modeling Workshop, Aug 7-12, 2016, Oaxaca, Mexico
171. Invited Speaker, “Reproducing Kernel Hilbert Spaces for Geometry and Material Sciences”, Geometry and Material Sciences (GEMS) at Okinawa Institute of Science and Technology, Oct 15-18, 2017, Okinawa, Japan
172. Invited Speaker, “Modern Computer Science”, Convocation 2016, Indian Institute of Technology Delhi, Nov 2-12, 2017, New Delhi, India
173. Invited Speaker, “Multi-Scale Machine Learning for Bio-Image Processing”, 14th Annual Advanced Imaging Methods (AIM) Workshop, Jan 24-27, 2017, Berkeley Cancer Research Laboratory, San Francisco, CA
174. Invited Speaker, “Multiscale and High Dimensional Techniques for Time Data Analysis”, First Annual Tissue and Microenvironment (TIME) Day at the University of Illinois at Urbana-Champaign, May 15, 2017, Urbana, IL
175. Invited Speaker, “Sampling and Optimization in Infrared Spectroscopy”, Multiscale and High-Dimensional Problems Conference, March 26-April 2, 2017, Oberwolfach, Germany
176. Invited Speaker, “Sampling and Optimization for High Dimensional Big Data”, Dagstuhl Seminar on Geometric Modelling, Interoperability and New Challenges, May 28-June 2, 2017, Schloss Dagstuhl, Saarbrücken, Germany
177. Invited Speaker, “Sampling and Optimization for High Dimensional Big Data”, INRIA Institut National De Recherche En Informatique Et En Automatique, June 2-9, 2017, Nice, France
178. Invited Speaker, “Optimized Polygonal Meshes for Quadratic Serendipity Finite Elements”, ADMOS 2017 Adaptive Meshing Methods and Applications Mini-symposium, June 25-29, 2017, Verbania, Italy
179. Invited Speaker, “The Holy Grail for Interactive Simulations”, BIRS-CMO Workshop 17w5008, Geometry and Computation for Interactive Simulation, Sep 24-29, 2017, Banff International Research Station for Mathematical Innovations and Discovery (BIRS) of Casa Matematica Oaxaca (CMO), Oaxaca, Mexico
180. Invited Speaker, “Mathematics of Heterogeneous Cryo-EM”, BIRS-CMO Workshop 17w5055, Mathematical Advances in Electron Microscopy, Oct 15-20, 2017, Banff International Research Station for Mathematical Innovations and Discovery (BIRS) of Casa Matematica Oaxaca (CMO), Oaxaca, Mexico
181. Invited Speaker, “Classification Problems with FTIR”, Second BIMoS Scientific Advisory Board Meeting, October 24, 2017, Berlin International Graduate School in Model and Simulation based Research (BIMoS), Technische Universität Berlin, Berlin, Germany
182. Invited Speaker, “The Promise of Infrared Spectroscopy”, ICMLDS 2017 (International Conference on Machine Learning and Data Science), Dec 14-15, 2017, Bennett University Campus in Greater Noida, Delhi, India

INVITED COLLOQUIA (not listed in Invited Conference/Workshop/Keynote Speaker Presentations)

Years 1984 - 1986

1. “The Complexity of Geometric Optimization”, Dept. of Computer Science, State University of New York, Albany, August 1984
2. “The Complexity of Geometric Optimization”, Dept. of I.O, Université de Montréal, Canada, October 1984
3. “Efficient Algorithms for Geometric Location Problems”, Dept. of Computer Science and Computer Engineering, Indian Institute of Technology, Delhi, India, December 1984
4. “Applying Galois Methods to Geometric Optimization Problems”, SIAM Conference on Geometric Modeling and Robotics, Albany, New York, July 1985
5. “Generalized Unfoldings for Shortest Paths”, SIAM Conference on Geometric Modeling and Robotics, Albany, New York, July 1985

6. "Limitations of Algorithmic Solvability", Dept. of Mathematics, Indiana University at Indianapolis, Indiana, February 1986
7. "Algorithmic Problems in Robot Motion Planning", Engineering Research Center, Purdue University, West Lafayette, April 1986
8. "Efficient Generation of Configuration Spaces", Army Robotics Workshop, Rensselaer, Troy, New York, June 1986
9. "Automatic Rational Parameterization of Curves and Surfaces", Army Robotics Workshop, Rensselaer, Troy, New York, June 1986
10. "The Parameterization of Rational Curves and Surfaces", Computers and Mathematics Conference, Stanford, California, July 1986

Year 1987

1. "Geometric Modeling Research, Computer Aided Manufacturing", International, Geometric Modeling Group, San Jose, California, Jan 1987
2. "Genus is a Birational Invariant", Midwest Theory Conference, University of Illinois, Urbana, Illinois (April 1987)
3. "Algorithmic Implicitization and Parameterization: The Known and the Unknown", Research Conference on Geometric Design, Detroit, Michigan, May 1987
4. "Algebraic Methods in Geometric Modeling, Computer Aided Manufacturing", International Geometric Modeling Group, Boston, Massachusetts, May 1987
5. "Geometric Modeling Research", Tata Research and Development Center, Pune, India, June 1987
6. "Geometric Modeling and Robotics", Computer Maintenance Corporation, Hyderabad, India, June 1987
7. "Geometric Modeling Research", Indian Institute of Technology, Delhi, New Delhi, India, June 1987
8. "Motion Planning with Algebraic Objects", First International Conference on Industrial and Applied Mathematics, ICIAM'87, Paris, France, June 1987
9. "Genus is a Birational Invariant: Parameterizing Algebraic Space Curves", SIAM Conference on Applied Geometry, Albany, New York, July 1987
10. "Convex Decompositions and Gaussian Approximations of Curved Objects", SIAM Conference on Applied Geometry, Albany, New York, July 1987

Year 1988

1. "Algorithms for Algebraic Curve and Surface Parameterization", Workshop on Algebraic Computational Geometry, Bellairs Research Institute of McGill University, Holetown, Barbados, Feb 1988
2. "Computations with Algebraic Curves and Surfaces", Department of Mathematical Engineering and Information Physics, University of Tokyo, Bunkyo, Tokyo, Japan, March 1988
3. "Algorithms for Planar Geometric Models", Department of Computer Science, Johns Hopkins University, Baltimore, MD, March 1988
4. "Tracing Surface Intersections in Geometric Modeling", Computer Aided Manufacturing - International, Geometric Modeling Group, Boston, Massachusetts, May 1988
5. "Mathematical Techniques in Solid Modeling", International Conference in Computer Integrated Manufacturing, RPI, Troy, NY, May 1988
6. "Approximation Techniques for Algebraic Curve Implicitization and Parameterization", T. J. Watson Research Center, IBM, Yorktown Heights, May 1988
7. "Computations with Algebraic Curves", Intl. Symposium on Symbolic and Algebraic Computation, Rome, Italy, July 1988
8. "Algorithms for Planar Geometric Models", Fifteenth Intl. Colloquium on Automata, languages and Programming, Tampere, Finland, July 1988
9. "Parameterization and Implicitization of Rational Algebraic Curves and Surfaces", Computer Aided Manufacturing - International, Geometric Modeling Group, Rochester, New York, July 1988
10. "Approximation Methods for Algebraic Curves and Surfaces", Workshop on Algorithmic Aspects of Geometry and Algebra, Mathematical Sciences Institute, Cornell University, Ithaca, NY, July 1988
11. "Geometric Modeling with Algebraic Surfaces", Invited keynote speaker, Keble College, Oxford University, UK, September 1988
12. "Geometric Modeling with Algebraic Surfaces", Colloquium Talk, Computer Science, New York University, October 1988

13. "Geometric Modeling with Algebraic Surfaces", Colloquium Talk, AT & T Bell Labs, Murray Hill, October 1988
14. "Approximation Methods for Algebraic Curves and Surfaces", Colloquium Talk, Computer Science, Rice University, October 1988

Year 1989

1. "Computing About Physical Objects", Presentation, Office of Naval Research, Arlington, VA, January 1989
2. "Geometric Modeling and Display using Algebraic Surfaces", Colloquium Talk, University of California, Berkeley, CA, May 1989
3. "Hermite Interpolation using Real Algebraic Surfaces", Colloquium Talk, University of Utah, Salt Lake City, UT, May 1989
4. "Computing About Physical Objects", Presentation, Silicon Graphics Inc., Mountain View, CA May 1989
5. "Computing About Physical Objects", Presentation, Xerox Research Center, Palo Alto, CA, May 1989
6. "Hermite Interpolation using Real Algebraic Surfaces", Presentation, ACM Conference on Computational Geometry, Saarbrucken, West Germany, June 1989
7. "Geometric Modeling: Software Research and Development", ONR Workshop on Geometric Design, Moscow, Idaho, July 1989
8. "Approximate Bivariate Factorization", Presentation, Intl. Symposium on Symbolic and Algebraic Computation, Portland, Oregon, July 1989
9. "Geometric Modeling: Software Research and Development", Presentation, Special Session on "Mathematical Questions in Computational Geometry", American Mathematical Society, Boulder, Colorado, August 1989
10. "Computing About Physical Objects", Presentation, Brazilian Congress on Computational Mathematics, Sao Jose do Rio Preto, Brazil, September 1989
11. "Using Algebraic Geometry in Surface Fitting", Presentation, Symposium to Honor Sam Conte, West Lafayette, Indiana, November 1989
12. "Surface Fitting with Algebraic Surfaces", Presentation, SIAM Conference on Geometric Design, Tempe, Arizona, November 1989
13. "Robust Computations of Polygon Nesting", Presentation, Intl. Workshop on Discrete Algorithms and Complexity, Fukuoka, Japan, November 1989
14. "The SHILP Graphical Editing and Display System for Curved Solids", Presentation, Hitachi Research Labs, Hitachi, Japan, November 1989
15. "Geometric Modeling Research", Presentation, Department of Computer Science, Akashi Technological College, Akashi, Japan, November 1989
16. "The GANITH Algebraic Geometry Toolkit", Presentation, Department of Mathematics, Nihon University, Japan, November 1989
17. "Robust Decompositions of Polyhedra", Presentation, Conference on Foundations of Software Technology and Theoretical Computer Sciences, Bangalore, India, December 1989
18. "The SHILP Graphical Editing and Display System for Curved Solids", Presentation, Department of Computer Science, Indian Institute of Science, Bangalore, India, December 1989

Year 1990

1. "G Interpolation using Piecewise Quadric and Cubic Surfaces", Conference Presentation, Symposium on Electronic Imaging Science & Technology, Santa Clara, CA, February 1990
2. "Rational Hypersurface Display", Conference Presentation, Symposium on Interactive 3D Graphics, Snowbird, Utah, March 1990
3. "The GANITH Algebraic Geometry Toolkit", Conference Presentation, Symposium on the Design and Implementation of Symbolic Computation Systems, Capri, Italy, April 1990
4. "Geometric Modeling Research", Colloquium Presentation, Department of Informatica & Sistemica, University of Rome "La Sapienza", Rome, Italy, April 1990
5. "Geometric Modeling with Algebraic Surfaces: GANITH & SHILP Toolkits", Invited talk at the Workshop on Practical Issues in Computational Geometry, DIMACS, Princeton University, Princeton, April 1990
6. "Birational Maps and Multi-polynomial Remainder Sequences", Invited talk at the Workshop on Algebraic Issues in Computational Geometry, DIMACS, Princeton University, Princeton, May 1990
7. "Constructive Algebraic Geometry", Conference Presentation at the Symposium on Algebraic Geometry and Applications, West Lafayette, IN, June 1990

8. "Geometric Computations on Algebraic Varieties of Bounded Degree", Conference Presentation, ACM Symposium on Computational Geometry, Berkeley, CA, June 1990
9. "G1 Interpolation using Piecewise Algebraic Surface Patches", Conference Presentation at the Symposium on Curves and Surfaces, Chamonix, France, June 1990
10. "Geometric Modeling with Algebraic Surfaces: GANITH & SHILP Toolkits", Colloquium Presentation, Department of Mathematics, University of Cantabria, Santander, Spain, June 1990
11. "Geometric Modeling Research", Colloquium Presentation, Department of Computer Science, University of Madrid, Madrid, Spain, June 1990
12. "Solving Algebraic Equations", Colloquium Presentation, Department of Mathematics, University of Madrid, Madrid, Spain, June 1990
13. "Unifying Parametric and Implicit Representations", Conference Course Presentation, ACM Siggraph Conference, Dallas, Texas, August 1990
14. "Project SHASTRA: Software Environments for Applied Geometry", Colloquium Presentation, Department of Computer Science, University of Massachusetts, Amherst, MA, October 1990
15. "Project SHASTRA: Software Environments for Applied Geometry", Colloquium, Presentation, Department of Computer Science, University of Florida, Gainesville, Florida, October 1990
16. "Efficient Algorithms and Data Structures in Geometric Design", Colloquium Presentation, Department of Mathematics and Computer Science, Williams College, Williamstown, MA, November 1990

Year 1991

1. "Geometric Modeling and Display in Engineering Design", Invited Address at the I.CO. GRAPHICS'91 Conference in Milan, Italy, February 1991
2. "Project SHASTRA: Software Environments for Applied Geometry", Colloquium Presentation, Department of Informatica & Sistemica, University of Rome "La Sapienza", Rome, Italy, March 1991
3. "Computation with Algebraic Varieties", Colloquium Presentation, Institute of System Sciences, Academia Sinica, Beijing, China, April 1991
4. "Surface Fitting with Algebraic Surface Patches", Colloquium Presentation, Computing Center, Academia Sinica, Beijing, China, April 1991
5. "Project SHASTRA: Software Environments for Applied Geometry", Colloquium Presentation, Department of Computer Science, Pohang Institute of Technology, Pohang, South Korea, April 1991
6. "Computation with Algebraic Varieties", Colloquium Presentation, Department of Mathematics, Pohang Institute of Technology, Pohang, South Korea, April 1991
7. "Geometric Modeling with Algebraic Surfaces", Colloquium Presentation, Department of Computer Science, Korea Advanced Institute of Science and Technology, South Korea, April 1991
8. "Project SHASTRA: Software Environments for Applied Geometry", Presentation, Hitachi Research Labs, Hitachi, Japan, May 1991
9. "Algebraic Geometry and Geometric Modeling", Presentation, Fujitsu Research Labs, Numazu, Japan, May 1991
10. "Electronic Models of the Human Anatomy", Invited Speaker, Symposium on Electronic Imaging Science & Technology, Boston, Massachusetts, November 1991
11. "Distributed and Collaborative Geometric Design", Colloquium Presentation, Department of Computer Science, University of Waterloo, Waterloo, Canada, December 1991

Year 1992

1. "Multivariate Interpolation and Approximation", Presentation, 7th Texas Approximation Theory Conference, Austin, Texas, January 1992
2. "Experiments in Distributed and Collaborative Design", Presentation, DARPA workshop on Manufacturing, Salt Lake City, Utah, January 1992
3. "Implicit Algebraic Splines and Applications", Colloquium Presentation, Indiana University - Purdue University at Indianapolis, Indiana, January 1992
4. "Surface Fitting in a Distributed Design Environment", Colloquium Presentation, Department of Computer Science, University of Southern California, Los Angeles, California, February 1992
5. "Surface Fitting in a Distributed Design Environment", Colloquium Presentation, Department of Computer Science, Stanford University, Stanford, California, March 1992

6. "Algebraic Surface Design and Finite Element Meshes", Presentation, NASA Workshop on Software Systems for Surface Modeling and Grid Generation, Langley Research Center, Hampton, Virginia, April 1992
7. "Parameterization in Finite Precision", Presentation, Graphics Interface '92, Vancouver, British Columbia, Canada, May 1992
8. "Multimedia Computing (What now in User Interfaces)", Invited Presentation at a Panel, Fourth International Conference on Software Engineering and Knowledge Engineering, Capri, Italy, June 1992
9. "Implicit Algebraic Splines and Applications", Invited Speaker at the 10th Army Mathematics Conference, West Point, New York, June 1992
10. "Generalized Hermite Interpolation for Algebraic Varieties", Invited Presentation, International Workshop on Mathematics Mechanization, IWMM'92, Beijing, China, July 1992
11. "Implicit Algebraic Splines and Applications", Colloquium Presentation, University of Tokyo, Tokyo, Japan, July 1992
12. "Distributed and Collaborative Geometric Design, Colloquium Presentation", ICASE & NASA Langley, Hampton, Virginia, August 1992
13. "Bezier and B-spline Approximations of Algebraic Surfaces", Invited Presentation at an International Workshop on Algebraic Computing in Geometry, RISC-LINZ, Austria, August 1992
14. "Distributed and Collaborative Geometric Design", Colloquium Presentation, University of Iowa, Iowa, October 1992
15. "B-spline Approximations of Algebraic Curves and Surfaces", Presentation at the Conference on Advances in Computational Mathematics, New Delhi, India, December 1992

Year 1993

1. "Shape Optimization in a Distributed and Collaborative Design Environment", Invited Presentation, AFOSR Workshop on Large Scale Optimization, Ames, Iowa, January 1993
2. "A-Spline: Algorithms and Combinatorics", Colloquium Presentation, New York University, February 1993
3. "Advances in Geometric Modeling", Invited Course Presentation, International Conference in Computer Graphics, Bombay, India, February 1993
4. "A Client-Server Link between GANITH and MATHEMATICA", Invited Presentation, Mathematica Developers Conference, Wolfram Research Inc., Urbana, IL, May 1993
5. "Trivariate Interpolation for Scientific Visualization", Research Seminar, University of Illinois, Urbana-Champaign, Urbana, IL, May 1993
6. "SHASTRA - An Architecture for Development of Collaborative Multimedia Applications", Invited Presentation, ONR workshop on Virtual Environments for Training, Targeting and Teleoperation, Research Triangle Park, North Carolina, May 1993
7. "Finite Representations of Real Parametric Curves and Surfaces", Presentation at the IFIP TC 5/WG 5.10 II Conference on Geometric Modeling in Computer Graphics, Genova, Italy, June 1993
8. "A-Splines vs B-Splines", Colloquium Presentation, Department of Informatica & Sistemica, University of Rome "La Sapienza", Rome, Italy, June 1993
9. "Shape Optimization in a Distributed and Collaborative Multimedia Environment", Invited Presentation, NASA workshop on Aerosciences, NASA Ames, CA, October 1993
10. "Distributed and Collaborative Modeling and Visualization", Invited presentation at the Intelligent Visualization Workshop, IEEE Visualization Conference, San Jose, CA, October 1993
11. "Distributed and Collaborative Scientific Problem Solving", Colloquium Presentation, Department of Computer Science and Electrical Engineering, University of Iowa, Iowa city, IA, October 1993
12. "Distributed and Collaborative Prototyping", Invited presentation at the Minisymposia on Robotics, SIAM Conference on Geometric Design, Tempe, AZ, November 1993
13. "Distributed and Collaborative Scientific Problem Solving", Colloquium Presentation, Department of Computer Science, Ohio State University, Columbus, OH, November 1993

Year 1994

1. "Modeling and Visualizing Polymers and Bio-Molecules", Colloquium Presentation, Department of Chemical Engineering, Purdue University, West Lafayette, IN, February 1994
2. "Reconstruction of Surfaces and Surfaces-on-Surfaces from Unorganized Weighted Points", Colloquium Presentation, AT & T Bell Laboratories, Murray Hill, NJ, March 1994

3. "Scientific Problem Solving in a Distributed and Collaborative Multimedia Environment", Colloquium Presentation, AT & T Bell Laboratories, Holmdel, NJ, March 1994
4. "Constructive Solid Geometry on a Distributed Memory MIMD Machine", Presentation at the CSG'94 Conference, Winchester, UK, April 1994
5. "Free Form Surface Design", Presentation at the Graphics Interface '94 Conference, Canada, (May 1994).
6. "Reconstructing and Visualizing Scalar Fields in Three Dimensions" 14th IMACS World Congress on Computational and Applied Mathematics, Atlanta, GA, June 1994
7. "Distributed Volume Modelling and Collaborative Visualization", Fifth Eurographics Workshop on Visualization in Scientific Computing, Rostock, Germany, July 1994
8. "Scalar Field Modeling and Visualization on the Intel Delta", Intel Supercomputer Users Group Workshop, ISUG94, San Diego, California, June 1994
9. "Data Fitting with Cubic A-splines", Computer Graphics International, CGI94, Melbourne, Australia, (July 1994)
10. "C 2 Surfaces-on-Surfaces", International Conference on Computer Aided Geometric Design, Penang, Malaysia, July 1994.
11. "Custom Prosthesis Design, Visualization, and Prototyping", Visualization in Biomedical Computing, VBC94, Rochester, MN, October 1994
12. "Triangulation and Display of Arbitrary Rational Parametric Surfaces", IEEE Visualization '94 Conference, Washington, DC, October 1994

Year 1995

1. "Modeling and Visualization of Surfaces-on-Surfaces", Minisymposium on Scientific Visualization and Multivariate Approximation Approximation Theory Conference, College Station, TX, Jan 1995
2. "Distributed Volume Modelling and Collaborative Visualization" Colloquium at the Department of Computer Science, Michigan State University, Lansing, MI, Feb 1995
3. "Distributed and Collaborative Geometry Environments" International Computational Geometry Software Workshop, Minneapolis, MN
4. "Modeling and Simulation in a Reconfigurable Collaborative Environment", Invited Presentation, ONR workshop on Virtual Environments for Training, Targeting and Teleoperation, Washington, DC, March 1995
5. "Distributed and Collaborative Prototyping Environments" Workshop on Human-Computer Interaction and Virtual Environments, U of Virginia-NASA, Hampton, VA, May 1995
6. "Modeling and Visualizing Polymers and Bio-Molecules" Workshop on Large Scale Optimization, Washington, DC, May 1995
7. "Distributed and Collaborative Geometry Environments", Colloquium at the Department of Computer Science, University of Waterloo, Waterloo, Canada, July 1995
8. "Spline Approximations of Real Algebraic Surfaces", SIAM Workshop on real Number Algorithms, Park City, Utah, July 1995
9. "Interactive Data Visualization", Pacific Graphics'95, Seoul, Korea, August 1995
10. "Reconstruction of Surfaces and Scalar Fields from 3d Scans", Siggraph 95, Los Angeles, CA, August 1995
11. "Modeling and Visualizing Surfaces and Functions on Surfaces", SIAM conference on Computer Aided Geometric Design, Nashville, TN, October 1995

Year 1996

1. "Modeling and Visualization of Multivariate Data", ONR Workshop on Visualization, Phoenix, AZ, February 1996
2. "Interrogative Visualization", University of Texas, Austin, Computer Science and TICAM Center, February 1996
3. "Collaborative CAD", IFIP Meeting on Geometric Modeling, Arlie, VA, May 1996
4. "Splitting a Complex of Convex Polytopes", ACM Computational Geometry Symposium, Philadelphia, May 1996
5. "Collaborative Shape Optimization in SHASTRA", and "Interrogative Visualization", High Performance Scientific Computing, C3AD, Brazil, July 1996
6. "Free-Form Modeling using Implicit Algebraic Splines" and "Polynomial Surface Patch Representations", SIGGRAPH 96 Courses, New Orleans, July 1996
7. "Computational Geometry for Interrogative Visualization", Canadian Computational Geometry, Ottawa, Canada, August 1996
8. "Modeling and Visualizing Vector Fields", Mathematics of Surfaces, Dundee, U.K., September 1996

9. "The Shastra Project", University of Texas, Austin, Computer Science, November 1996
10. "Biomedical Modeling, Simulation, Visualization, Validation from 3D Scans", IMA Workshop on 3D Scanning, Minneapolis, MN, December 1996

Year 1997

1. "Closed Loop MR Imaging, and Interrogative Visualization for Spinal Injuries", McMaster Hospital, Canadian Spinal Research Organization, Hamilton, Ontario, February 1997
2. "A-patches and NURB-patches: Bones & Molecules", NSF Workshop on Voronoi Diagrams, Delaunay Triangulations and Splines, Tempe, AZ, February 1997
3. "Contour Spectrum", IEEE Visualization Conference, Phoenix, AZ, October 1997

Year 1998

1. "Project VisualEyes" Bell Labs/Lucent Technologies, Murray Hill, January 1998
2. "Modeling & Visualization with Medical Data" U. T. San Antonio Health Center, February 1998
3. "Molecular Modeling and Visualization", Geometric Modeling Conference, Tel Aviv, Israel, February 1998
4. "Project Visual Eyes", San Diego Super Computing Center/Scripps Research Clinic, March 1998
5. "Data Intensive Visualization", Lawrence Livermore National Labs, CA, April 1998
6. "Project Visual Eyes", University of Kentucky, May 1998
7. "Topology Enhancement for Visualization", IEEE Visualization Conference, Orlando, FL, October 1998
8. Geometry Compression for MPEG 4 Working Group, St. Petersburg, FL, November 1998

Year 1999

1. "Project Visual Eyes", Indian Institute of Technology, Delhi, India, January 1999
2. "Visualization Tools", NPACI meeting San Diego, CA, February 1999
3. "Parallel Isocontouring" SIAM Parallel Processing Conference, San Antonio, TX, March 1999
4. "Terascale Visualization", NSF Large Data Visualization Workshop, Salt Lake City, UT, May 1999
5. "High Performance Visualization", Schlumberger Houston, TX, June 1999
6. "Compression and Streaming of Geometric Models", India Institute of Technology, Delhi, India, August 1999
7. "Vector Topology in Geometric Modeling and Visualization", Symbolic Numeric Computation Conference, Hagenberg, Austria, August 1999
8. Super Computer '99 Conference, Portland, Oregon, November 1999

Year 2000

1. NPACI All Hands Meeting, San Diego, CA, February 2000
2. Ohio State University colloquium talk, Columbus, Ohio, February 2000
3. UCSD Advisory Committee Meeting, San Diego, CA, March 2000
4. Indian Institute of Technology, Delhi, India, April 2000
5. LDRD Labs Review - Sandia, Albuquerque, New Mexico, April 2000
6. CAGD Workshop Invited Speaker, Boston, Mass, May 2000
7. Mining Scientific Datasets, Minneapolis, Minnesota, June 2000
8. Conference on Algebra and Algebraic Geometry with Applications, Purdue University, Lafayette, Indiana, June 2000

Year 2001

1. "The Next Steps in Scalable Visualization", NPACI, All Hands Meeting, Panel Presentation, San Diego, CA, February 2001
2. "Interrogative Visualization and Scientific Discovery", Lamar University Invited Talks, Beaumont, TX, April 2001
3. Advisory member, UC San Diego - National Center on Microscopy Research, San Diego, CA, April 2001
4. "Geometry Processing and Visualization in Hierarchical Modeling in Heterogeneous Materials", Sandia National Lab., Albuquerque, NM, May 2001

5. Member of an NIH Study Group (Review Panel), National Institute of Health, Washington, DC, July 2001
6. “Hierarchical and Adaptive Geometric Diffusion”, Information Visualization Conference (IV2001), London, UK, July 2001
7. IPAM Invited Talk on Anisotropic Diffusion – Los Angeles, CA, 2001
8. “Large Data Visualization,” Colloquium at the University of Utah, Salt Lake City, UT, September 2001
9. Talk on Image Processing Techniques, Baylor College of Medicine, Houston, TX, November 2001
10. “Parallel Isocontouring”, IEEE Visualization Conference, Salt Lake City, UT, November 2001

Year 2002

1. Invited Workshop Talk “Algebraic Geometry of Molecular CAD”, Invited Talk in Catania, Italy, March 2002
2. Invited Talk at a conference on “Geometric Computation”, Hefei, China, April 2002
3. “Active Visualization”, Invited Paper at the Eurographics Workshop on Virtual Environments, Barcelona, Spain, May 2002
4. “Parallel and Out-of-Core View Dependent Visualization”, IEEE-TCVG Symposium, Barcelona, Spain, May 2002
5. “Algebraic Geometry of Fine Elements”, Invited Colloquium at the University of Cantabria, Santander, Spain, June 2002
6. Invited Talk at the Gordon Conference on Diffraction Methods, Connecticut, July 2002
7. Invited Talk at the IUCR World Congress on Crystallography, Geneva, Switzerland, August 2002
8. “Computational Visualization”, Invited Lecture Series at the University of Mannheim, Germany, August 2002

Year 2003

1. Invited Colloquium “Interrogative Visualization”, IIT, Bombay, India, March 2003
2. NPACI AHM Talk “Bioinformatics and Molecular Visualization”, San Diego, California, March 2003
3. Invited Workshop Talk “Particle Picking Methods”, San Diego, California, April 2003
4. Invited Colloquium “Image Processing and Visualization”, Rockefeller University, New York, May 2003
5. Invited Colloquium “Computational Biology and Visualization”, IIT, Delhi, India, June 2003
6. Keynote presentation: “Macromolecular Modeling and Visualization” at the VG’03 Volume Graphics Symposium, Tokyo, Japan, July 2003
7. Invited Colloquium “Molecular Modeling and Visualization”, Cambridge Research, London, (July 2003)
8. Plenary presentation: “High Performance Visualization Architecture”, University of Alaska, Fairbanks, Alaska, August 2003
9. Keynote presentation: “Volumetric Filtering Modeling and Visualization for Nano- Medicine”, Eurographics 2003, Granada, Spain, September 2003
10. Invited Colloquium: “Macromolecular Modeling and Visualization”, University of Maryland, College Park, September, 2003
11. Invited Presentation: “Quantitative Visualization of Static and Dynamic Macromolecular Complexes”, Workshop on Visualization of Large Macromolecular Complexes, Berkeley, CA, October, 2003

Year 2004

1. Invited *Altenberg Lecture* “Visual Representations in Biology”, Konrad Lorenz Institute of Theoretical Biology, Vienna, Austria, February 2004
2. Invited *McGovern Lecture* “Image Processing and Visualization for Structural Biology”, University of Texas Health Sciences, Houston, Texas February 2004
3. Invited Colloquium: “Macromolecular Modeling, Simulation and Visualization for Nano-Medicine”, Institute of Molecular Medicine, Houston, Texas, March 2004
4. Invited Presentation, “Cubic A-Patches and Twenty Seven Lines on a Cubic”, Algebraic Geometry and Geometric Modeling Workshop, Math Science Research Institute, Berkeley, California, April 2004
5. Invited Colloquium, “Flexible Chain Complex Models for Cryo-EM Maps and Atomic Macromolecular Structures”, Scripps Research Institute, San Diego, California, April 2004
6. Invited *Altenberg Lecture* “Modeling Biology”, Konrad Lorenz Institute of Theoretical Biology, Vienna, Austria, July 2004
7. Invited Keynote, “Modeling and Quantitative Visualization of Virus Ultrastructure”, Symp. on Computational Applications of Algebra and Geometry, Beaumont, Texas July 2004

8. Invited Presentation “Modeling Synaptic Transmission at the Neuro-Muscular Junction”, Multi-scale Modeling Workshop, Pittsburgh, PA August 2004
9. Invited Talk, “Quality Meshing of Large Biomolecular Complexes”, Japan Society of Industrial and Applied Mathematics, Tokyo September 2004
10. Colloquium Talk, “Flexible Chain Complex Models for Cryo-EM Maps and Atomic Macromolecular Structures”, University of California, San Diego September 2004
11. Colloquium Talk, “Modeling and Quantitative Visualization of Virus Ultrastructure”, Rutgers University, October 2004
12. Several invited Colloquium at the Univ. of Tokyo, Hokkaido University, Osaka University, Japan Advanced Institute of Science and Technology, Wakayama University, Japan , October 2004 to January 2005

Year 2005

1. Several Invited Colloquium on “Structural Biology Challenges to Computer Sciences” at Seoul National University, Sogang University, Hanyang University, Seoul Korea, Jan. 2005
2. Invited Presentation on “Fast Summation Methods for Macromolecular Energy Estimations”, Computational Biology, The Scripps Research Institute, March 2005
3. Invited Speaker at the Gordon Conference in 3D Electron Microscopy, New London, New Hampshire, July 2005
4. Invited Presentation on “Ultrastructure Elucidation from 3D Electron Microscopy”, Computational Structural Biology, Data Mining Workshop, Stanford University, Stanford, August 2005
5. Invited Colloquium on “Geometric and Signal Processing of 3D Electron Microscopy”, Computer Science Dept., University of Texas, Dallas, September 2005
6. Invited Colloquium on “Geometric and Signal Processing of 3D Electron Microscopy”, Computer Science Dept., New York University, October 2005
7. Invited Colloquium on “Geometric and Signal Processing of 3D Electron Microscopy”, Computer Science Dept., University of Texas, El Paso, October 2005
8. Invited Colloquium on “Multiscale Bio-Modeling, Simulation and Visualization”, Computer Science Dept., University of Paris XI, Paris, December 2005
9. Invited Colloquium on “Multiscale Bio-Modeling, Simulation and Visualization”, Computer Science Dept., University of Roma Tre, Rome, December 2005

Year 2006

1. Invited Colloquium on “Modeling and Visualization of Synaptic Transmission at the Neuro-Muscular Junction”, National Center for Biological Research, Bangalore, India, January, 2006
2. Invited *Nexus Colloquium* on “PC Cluster Based Visualization Services on Demand”, Computer Science Dept., University of Stuttgart, Germany, February, 2006
3. Invited Talk on “Implicit Spline Geometry and Boundary Element Analysis for Biological Problems“, NIH, Bethesda, Maryland, February, 2006
4. Invited Colloquium on “Spatially Realistic Modeling of Biological Processes”, Mathematics Dept., University of Stuttgart, Germany, February, 2006
5. Invited Colloquium on “Algebraic Geometry, Topology and Structural Biology”, Mathematics Dept., Purdue University, *Professor S. Abhyankar’s Festschrift*, March, 2006
6. Invited *Jacques Morgenstern Colloquium* on “Geometric and Signal Processing for Biomolecular Interactions ”, INRIA- Sophia Antipolis, France, April, 2006
7. Invited Colloquium on “Geometric and Signal Processing of 3D Electron Microscopy”, Minisymposium at the Annual SIAM conference on Imaging Sciences, Minneapolis, May, 2006
8. Invited Colloquium on “Geometric and Signal Processing in Computational Structural Biology”, Computer Science Dept., University of Swansea, Swansea, UK, June, 2006
9. Paper Presentation on “Identifying Flat and Tubular Regions for Point Sampled Geometry”, Annual ACM Solid and Physical Modeling Conference, Cardiff, UK, June, 2006
10. Invited Colloquium Talk on “Planar and Cylindrical Feature Identification of a Shape via Unstable Manifold of Distance Function” Cardiff, June 2006.
11. Paper Presentation on “Progressive Conversion of B-Rep to BSP for Streaming Geometry”, Computer Aided Design Conference, Phuket, Thailand, June, 2006

12. Invited Colloquium on “Multiscale Bio-Modeling, of the Neuro-Muscular Junction”, Computer Science Dept., University of Roma Tre, Rome, July 2006
13. Invited Colloquium on “Efficient Computation of Molecular Surfaces, Energetics, Forces”, Minisymposium at World Congress on Computational Mechanics, Los Angeles, July 2006
14. Invited Colloquium on “Static and Time Dependent Meshing from Imaging”, Annual Meeting of the National Bio-Medical Center, San Diego, August, 2006
15. Invited Colloquium on "Computer Science Research in Computational Biology", Natl. Academy of Sciences, Vietnam Education Foundation Review, Hanoi, September 2006
16. Invited Colloquium on “Algebraic Splines and Differential Equations”, Institute of Math. Applications (IMA) Algebraic Geometric Methods in Engineering Workshop, Minneapolis, September 2006
17. Invited Colloquium on “Meshing and Biomedical Image Research”, EWHA Women’s University, Seoul, September 2006
18. Invited Colloquium on “Fast Algorithms for Molecular Surfaces and Solvation Energetics”, University of Pennsylvania, Philadelphia, September 2006
19. Invited Colloquium on “Automatic Generation of Computer Models From Multi-Modal Biomedical Imaging”, University of Washington, St. Louis, October 2006
20. Conference Talk on “Secondary and Tertiary Structural Fold Elucidation from 3D EM Maps on Macromolecules”, 5th Indian Conference on Computer Vision, Graphics and Image, Madurai, India, December 2006

Year 2007

1. Invited Distinguished Colloquium on “Geometry and Signal Processing for Modeling Bio-Molecular Interactions”, University of Central Florida, Orlando, January 2007
2. Invited Keynote Presentation on “In Silico Methods in Cellular Engineering”, 24th Annual HSEMB Conference, Houston, February 2007
3. Invited Colloquium on “Applications of Approximation Theory”, International Conference in Approximation Theory, San Antonio TX, March 2007
4. Invited Colloquium on “Geometry and Signal Processing for 3D Cryo-EM ” Joachim Frank’s Lab, Wadsworth Center, Albany NY, March 2007
5. Invited Colloquium on “Geometry and Signal Processing for 3D Cryo-EM ”, National Cancer Center, NIH, Bethesda, MD, March 2007
6. Invited Colloquium Talk on “Geometry and Signal Processing for 3D Cryo-EM ” Joachim Frank’s Lab, Wadsworth Center, Albany NY, March 2007
7. Invited Colloquium on “Molecular Structure and Properties Elucidation from 3D Electron Microscopy”, Institute of Molecular Science, Okazaki, Japan, May 2007
8. Invited Talk on “Using Cyber-Infrastructure for Dynamic Data Driven Laser Treatment of Cancer” ICCS 2007 Workshop, Beijing, May 2007
9. Invited Colloquium on “Imaging to Modeling with Applications in Computer Graphics”, at the University of Tokyo, Tokyo, Japan, May 2007
10. Invited Colloquium on “Computer Sciences Research in Computational Biology”, Center of Biological Research, Hanoi, Vietnam, August 2007
11. Invited Colloquium on “Computer Sciences Research in Computational Biology”, Institute of Computational Biology, Madrid, Spain, August 2007
12. Invited Joint Colloquia on “Structure Elucidation from 3D Electron Microscopy”, University of Darmstadt and Fraunhofer Institute of Computer Graphics, Darmstadt Germany, August 2007
13. Invited Colloquium “Algebraic Splines and Biophysical Analysis”, at the Indian Institute of Science, Bangalore, December 2007.

Year 2008

1. Invited Remote Advanced Visualization Lectures “Interrogative Visualization from Algebraic Finite Elements”, Old Dominion University, February 6, 2008
2. Invited Remote Advanced Visualization Lectures “Quantitative Visualization of Multiscale Bio-Imaging”, Old Dominion University, February 27, 2008
3. Invited Colloquium, “Generation and Use of Computer Models from BioImaging”, University of Toronto, Canada, February 2008

4. Invited Colloquium, “Generation and Use of Computer Models from BioImaging”, Rochester Institute of Technology, February 2008
5. Invited Colloquium, “Molecular Electron Microscopy to Biophysical Modeling and Analysis”, Cornell University, March 2008
6. Invited Colloquium, “Molecular Electron Microscopy to Biophysical Modeling and Analysis”, Penn State University, March 2008
7. Invited Colloquium, “Computational Bio-Molecular Modeling and Analysis for Drug Discovery”, University of Antonoma, Madrid, March 2008
8. Invited Colloquium on “Computational Bio-Molecular Modeling and Analysis for Drug Discovery”, Brown University, Providence, RI, March 2008
9. Conference Presentation, “Physically-based Surface Texture Synthesis Using a Coupled Finite Element System”, Geometric Modeling and Processing, GMP08, April 2008, PMID: PMC3103232
10. Invited Colloquium “Image Analysis and Structure Elucidation Techniques for Single Particle Cryo-EM vs. Cryo-ET”, University of Uppsala, Sweden, May 2008
11. Invited Colloquium Talk on “Image Analysis and Structure Elucidation Techniques for Single Particle Cryo-EM vs. Cryo-ET”, Karolinska Institute, Sweden, May 2008
12. Invited Colloquium Talk on “Computational Bio-Molecular Modeling and Analysis for Anti-Viral Drug Discovery”, UTMB Departmental Talk, Galveston TX, May 2008
13. Invited Colloquium Talk on “Spatially Realistic Spline Finite Element Models from Imaging”, L’Université Paris Descartes, Paris, July 2008
14. Invited colloquial talk, “Algebraic Splines in Molecular Biophysical Analysis”, University of Cantabria Autumn School on Shapes, Santander Spain, November 2008

Year 2009

1. Invited mini-symposium talk, “Variational Methods for Molecular Models and Minimal Surfaces”, 2009 AMS/MAA Joint Meetings, Washington DC, January 2009
2. Invited colloquial talk, “Computational Processing of Medical Imaging and Microscopy”, University of Tokyo, April 2009
3. Invited colloquial talk, “Computational Processing of Medical Imaging and Microscopy”, Chinese Academy of Sciences, Beijing, April 2009
4. Invited colloquial talk, “Computational Processing of Medical Imaging and Microscopy”, Hong Kong University, Hong Kong, April 2009
5. Invited colloquial talk, “Computer Science and Mathematics of Drug Search and Scoring Techniques”, India Institute of Technology, New Delhi, May 2009
6. Invited colloquial talk, “Efficient Computations for Drug Discovery”, Freie Universität Berlin, September 2009.
7. Invited colloquial talk, “Structure Elucidation and Visualization from 3D Electron Microscopy”, Freie Universität Berlin, September 2009.
8. Invited colloquial seminar talk, “Fast Computational Algorithms in Structure Biology”, University of Cantabria, Santander, Spain, October 2009.
9. Invited colloquial talk, “Fast Computational Algorithms in Structure Biology”, Indian Institute of Technology, New Delhi, October 2009
10. Invited colloquial talk, “Challenges in Electron Microscopy I & II”, Chinese Academy of Science, Beijing, December 2009
11. Invited colloquial talk, “Multiscale Modeling of Neuronal Electron Plasticity”, Tongji University, Shanghai, December 2009
12. Invited colloquial talk, “Fast Algorithms in Molecular Modeling”, Hong Kong University, Hong Kong, December 2009

Year 2010

1. Invited colloquial talk, “Computational Mathematics for Protein-Protein Interactions”, University of Luebeck, Hamburg, Germany, May 2010
2. Invited colloquial talk, “Spatially Realistic Multi-Scale Modeling”, King Abdullah University of Science and Technology (KAUST), June, 2010.

3. Invited colloquial talk, “Computational Analysis of Protein Interactions for Drug Discovery”, Boston University, June 2010
4. Invited colloquial talk, “Computational Analysis of Protein Interactions for Drug Discovery”, University of Tokyo, July 2010
5. Invited colloquial talk, “Computational Analysis of Molecular Interactions for Drug Discovery”, Seoul National University, July 2010
6. Invited colloquial talk, “Solubility by Radicals and Monodromy of Riemann Surfaces”, University of Pune, India, December 2010

Year 2011

1. Invited colloquial talks, “Drug Design and Discovery” and “Theory and Experiments in Computational Protein-Protein Docking”, Winter Enrichment Program, King Abdullah University for Science and Technology (KAUST), Jeddah, Saudi Arabia, January 2011
2. Invited colloquial talk, “Computational Molecular Biology, Modeling, and Visualization”, Texas A&M, College Station, TX, February 2011
3. Invited colloquial talks, “Computational Molecular Biology Part 1: Modeling from Microscopy”, and “Computational Molecular Biology Part 2: Drug Discovery”, University of Utah, March 2011
4. Invited mini-course, “Computational Molecular Biology: Modeling and Visualization”, University Roma Tre, Rome, April 2011
5. Invited colloquial talks, “Dual Finite Elements and Discrete Hodge Stars”, “Harmonic Analysis for Molecular Docking”, and “Computational Geometry for Efficient Molecular Binding Affinities”, University of Nice, France, June 2011
6. Invited colloquial talk, “A-periodic Tilings and Virus Icosahedral Assemblies”, Meiji University, Itaka Campus, Japan, September 2011
7. Invited colloquial talk, “Harmonic Analysis for Protein-Protein Docking” and “Multi-scale Electrophysiology Modeling from Electron Microscopy”, University of Tokyo (Hongo), Japan, October 2011
8. Invited colloquial talk, “Volumetric Photography from 2D EM for Drug Discovery”, University of Tsukuba, Japan, October 2011
9. Invited colloquial talk, “Multi-scale Electrophysiology Modeling from Electron Microscopy”, University of Tokyo, Komaba, Japan, October 2011
10. Invited colloquial talk, “Fast Estimation of Docking Filters and Protein Binding Affinities”, University of Tokyo, Kashiwa, Japan, October 2011
11. Invited colloquial talk, “Volumetric Photography from 2D EM for Drug Discovery”. Keio University, Japan, October 2011
12. Invited colloquial talk, “Generalized Barycentric Finite Elements on Convex Polygons”, Meiji University, Itaka Campus, Japan, October 2011

Year 2012

1. Invited colloquial talk, “Space and Cache Efficient Neighborhood Maintenance for Molecular Simulations”, Japan Advanced Institute of Science and Technology, Japan, January 2012
2. Invited presentation at JT Oden’s 75th Birthday conference, “Generalized Barycentric Finite Elements”, UT Austin, January 2012
3. Invited UT Mathematics colloquium, “Computational Harmonic Analysis for Molecular Recognition”, UT Austin, Mathematics, January 2012
4. Invited colloquial talk, “Generalized Barycentric Finite Elements with Applications”, University of Yamanashi, Japan, February 2012
5. Invited colloquial talk, “Generalized Barycentric Finite Elements with Applications”, University of Tokyo, Japan, February 2012
6. Invited colloquial talk, “Generalized Barycentric Finite Elements with Applications”, U of Pennsylvania, Philadelphia, March 2012
7. Invited colloquial talk, “Multiscale Imaging, Geometry, Informatics and Visualization”, Polytechnic University of Catalonia, Spain, June 2012
8. Invited colloquial talk, “Form and Function: Multiscale Modeling of Neuronal Electrophysiology in the Hippocampus”, University of Girona, Spain, June 2012

Year 2013

1. Invited colloquial talk, “Biomedical Instrumentation, Imaging, Vision, Geometry, Informatics and Visualization”, Indian Information Technology Research Academy, January, 2013
2. Invited colloquial talk, “Multi-Protein Molecular Recognition”, The University of Texas Southwestern, Medical School, Dallas, Texas, February 2013
3. Invited colloquial talk, “Multi-Component Assembly Prediction: 3D Jigsaw Puzzles”, The Ohio State University, Columbus, Ohio, February 2013
4. Invited colloquial talk, “Multi-Component Assembly Prediction: 3D Jigsaw Puzzles”, Columbia University, New York, May 2013
5. Invited colloquial talk, “Multi-Component Assembly Prediction: 3D Jigsaw Puzzles”, New York University, New York, May 2013
6. Invited seminar speaker, “Automated Prediction of Molecular Assemblies,” University of Michigan, Ann Arbor, Michigan, September 2013
7. Invited seminar speaker, “Automated Prediction of Molecular Assemblies,” University of Florida, Gainesville, Florida, October 2013

Year 2014

1. Invited colloquial talk, “Biomedical Instrumentation, Imaging, Vision, Geometry, Informatics and Visualization”, Indian Information Technology Research Academy, January, 2013
2. Invited colloquial talk, “Automated Prediction of Molecular Assemblies with Quantified Uncertainty,” February 2014.
3. Invited colloquial talk, “Computational Topology, Geometry and Analysis for Quantitative Relationships Between Biological Form and Function From 3D Electron Microscopy,” Analysis & Visualization of Large Collections of Imaging Data Conference, April 2014.
4. Invited colloquial talk, “Validated Computational Modeling of the Structure of GP120 with all variable loops in complex with CD4 and Fab 17b,” NIH: Structural Biology Related to HIV/AIDS Conference, June 2014.
5. Invited colloquial talk, “Structure Refinement and Validation Protocol to Model Variable Regions of Glycoproteins,” August 2014.
6. Invited colloquial talk, “Quasi Monte Carlo Sampling, Integration and Geometric Optimization” & “ G^1 Partition of Unity Finite Element Splines,” INRIA Sophia Antipolis Conference, September 2014.
7. Invited colloquial talk, “Low Discrepancy Samplings of High Dim. Geometric Spaces with Applications”, Sandia National Laboratories, Albuquerque, November 2014

Year 2015

1. Invited colloquial talk, “Low Discrepancy Samplings of High Dimensional Geometric Spaces with Applications”, University of Maryland, College Park, May, 2015
2. Invited colloquial talk, “Low Discrepancy Samplings of High Dimensional Geometric Spaces with Applications”, State University of New York, Stony Brook, June, 2015
3. Invited colloquial talk, “Imaging and Visualization of FIB-SEM”, Lawrence Berkeley Labs, Berkeley, CA, July, 2015
4. Invited colloquial talk, “Fast, Approximate and Scalable Geometric Optimization”, University of Chicago, Toyota Technical Institute, Chicago, IL, October 4-6, 2015.
5. Invited Talk, “Imaging Data Science for Translational Medical Research”, Fall 2015 Research Conference hosted by Dell Medical School, University of Texas at Austin, Austin, TX, Oct 7, 2015
6. Invited colloquial talk, “Fast, Approximate and Scalable Geometric Optimization”, Society for Industrial and Applied Mathematics (SIAM) Conference on Geometric Design/Solid and Physical Modeling, Salt Lake City, UT, October 11-12, 2015.
7. Invited colloquial talk, “Quality Partitioned Meshing of Multi-Material Objects”, International Meshing Roundtable IMR 2015, Sandia Nat’l Laboratories, Procedia Engineering, Vol 124, pp 187-199, 2015

8. Invited conference talk, “Highly Symmetric and Congruently Tiled Meshes for Shells”, International Meshing Roundtable IMR 2015, Sandia Nat’l Laboratories, AT&T Conference Center, University of Texas, Austin, TX, October 12-15, 2015 (PMCID: PMC4994975)
9. Invited talk, “Scalable Global Optimization Problems in Imaging and Geometry Processing”, Workshop for Joint Research Exchange between University of Aachen (AICES) and UT ICES, Aachen, Germany, November 5-6, 2015.
10. Invited Lecture, “Statistical Bio-Modeling for Predictive Medicine”, Autumn School and Workshop, Instituto Superior Tecnico, Campus Alameda, Lisbon, Portugal, November 12, 2015
11. Invited colloquial talk, “Fast, Approximate, and Scalable Geometric Optimization”, University of Sydney, Sydney, Australia, December 18, 2015
12. Invited colloquial talk, “Fast, Approximate, and Scalable Geometric Optimization”, Auckland University, Auckland, Australia, December 22, 2015

Year 2016

1. Invited colloquial talk, “Fast, Approximate and Scalable Geometric Optimization”, Applied Mathematics Colloquium, University of Arizona, Tucson, Arizona, April 14-16, 2016
2. Invited talk, “Algebra and Geometry of Reproducing Hilbert Space Kernels”, BIRS-CMO Workshop, Computational Algebra and Geometric Modeling, Oaxaca, Mexico, Aug -12, 2016
3. “Modern Computer Science”, to new Computer Science Students, University of Texas at Austin, September 27, 2016
4. Conference Lecture, “Statistical Framework for Uncertainty Quantification in Computational Molecular Modeling” (with Nathan Clement & Muhibur Rasheed), 7th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics, October 2-10, 2016, Seattle WA.
5. Invited Speaker, “Reproducing Kernel Hilbert Spaces for Geometry and Material Sciences”, Geometry and Materials Sciences (GEMS) Workshop, Okinawa Institute of Science and Technology, Oct 15-18, 2016, Okinawa, Japan.
6. Convocation Presentation to receive conferment of the Distinguished Alumni Award, “Modern Computer Science”, Indian Institute of Technology, November 5, 2016, New Delhi, India

Year 2017

1. Invited Speaker, “Multi-Scale Machine Learning for Bio-Image Processing”, 14th Annual Advanced Imaging Methods (AIM) Workshop, January 24-27, 2017, Berkeley Cancer Research Laboratory, Berkeley, California
2. Invited colloquial talk, “Compressive Sensing and geometric Optimization”, March 14-17, 2017, New York University Media Research Lab, New York, NY
3. Invited Lecture, “Geometry of Discontinuous Galerkin for Polyhedral Elements”, Advances in Computational Sciences and Engineering, US Association for Computational Mechanics (USACM), March 20-21, 2017, Austin, TX
4. Invited Speaker, “ Sampling and Optimization for High Dimensional Big Data”, Institute National De Recherche Informatique et En Automatique (INRIA), June 2-9, 2017, Nice, France
5. Invited speaker, “The Promise of Infra-red Spectroscopy”, Digital Visualization Center (ViDi), The University of Pennsylvania, October 9-12, 2017, Philadelphia, PA

Expert Testimony and Consultation

District Court Cases:

1. American Video Graphics, L.P. vs. Electron Arts Inc., et al., 2004-2005
2. Landmark Graphics Corp. and Magic Earth Inc. vs. Seismic Microtechnology, 2006
3. Paradigm Geophysical Corp. vs. Magic Earth, 2006
4. Symbol Technologies vs. Metrologic Instruments, 2006-2007
5. Coopervision, Inc. vs. CIBA Vision Corp., 2008
6. Peter Tryzna, Esq. vs. Patent Office, 2011
7. Apple Inc. vs. HTC Inc., 2011-2012
8. K. Menard vs. St. Luke Episcopal/Siemens Healthcare Diagnostics, 2013
9. Transcenic Inc. vs. Google, et al., 2012 - 2015
10. Amazon vs. HHP, 2013 - 2015
11. Transcenic Inc. vs. Nokia, 2016 - 2017
12. Capital Securities System vs. NCR Corp., et al., 2016
13. Eagleview Technologies Inc., and Pictometry International Corp., v. Xactware Solutions Inc., and Verisk Analytics, Inc. et al. 2017
14. Princeton Digital Image Corporation v. Ubisoft, Inc. , 2018

IPR Cases:

1. Apple Inc. v. ZII LABS Inc., IPR 2015-00931, Patent 5,835,096
2. Apple Inc. v. ZII LABS Inc., IPR 2015-00996, Patent 5,831,637
3. Apple Inc. v. ZII LABS Inc., IPR 2015-00964, Patent 6,111,584
4. Microsoft v. Bradium Technologies, IPR 2015-01432, Patent 7,139,794
5. Microsoft Corporation v. Windy City Innovations LLC, IPR 2016-01067, Patent 8,407,356
6. Microsoft Corporation v. Windy City Innovations LLC, IPR 2016-01137, Patent 8,473,552
7. Microsoft Corporation v. Windy City Innovations LLC, IPR 2016-01138, Patent 8,473,552

8. Microsoft Corporation v. Windy City Innovations LLC, IPR 2016-01141, Patent 8,458,245
9. Microsoft Corporation v. Windy City Innovations LLC, IPR 2016-01146, Patent 8,473,552
10. Microsoft Corporation v. Windy City Innovations LLC, IPR 2016-01147, Patent 8,473,552
11. Microsoft Corporation v. Windy City Innovations LLC, IPR 2016-01155, Patent 8,694,657
12. Facebook v. Windy City Innovations LLC, IPR 2016-01156, Patent 8,458,245
13. Facebook v. Windy City Innovations LLC, IPR 2016-01157, Patent 8,407,356
14. Facebook v. Windy City Innovations LLC, IPR 2016-01158, Patent 8,473,552
15. Facebook v. Windy City Innovations LLC, IPR 2016-01159, Patent 8,694,657
16. Samsung Electronics v. Nvidia Corporation, IPR 2015-01270, Patent 7,038,685
17. Samsung Electronics v. Nvidia Corporation, IPR 2015-01198, Patent 7,015,913
18. Broadcom+Avago Technologies General v. Sony Corporation, IPR 2015 -00520, Patent 5,870,087
19. Xactware Solutions Inc. v. Pictometry International, Corp., IPR 2016-00593, Patent 8,823,732
20. Xactware Solutions Inc. v. Pictometry International, Corp., IPR 2016-00594, Patent 8,542,880
21. Xactware Solutions Inc. v. Eagle View Technologies, Inc., IPR 2016-00589, Patent 8,825,454
22. Xactware Solutions Inc. v. Eagle View Technologies, Inc., IPR 2016-00590, Patent 8,818,770
23. Xactware Solutions Inc. v. Eagle View Technologies, Inc., IPR 2016-00591, Patent 8,209,152
24. Xactware Solutions Inc. v. Eagle View Technologies, Inc., IPR 2016-00592, Patent 8,542,737
25. Broadcom+Avago Technologies General v. Sony Corporation, IPR 2016 -00xxx, Patent 7,720,294
26. Broadcom v. Sony Corporation, IPR 2017 -00xxx, Patent 6,982,663
27. Broadcom v. Sony Corporation, IPR 2017 -00xxx, Patent 6,744,387
28. LG Electronics v. AMD, IPR 2017 -00xx, Patent 7,633,506
29. LG Electronics v. AMD, IPR 2017 -00xx, Patent 7,796,133
30. Align Technology Inc. v. 3 Shape A/S, IPR 2017 -00xx, Patent 9,629,551
31. Align Technology Inc v. 3 Shape A/S, IPR 2017 -00xx, Patent 9,329,675