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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
- American Association for the Advancement of Science- Fellow - 2008
- 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
- 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), ,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, Workshop on Mathematical Modeling and Analysis of Protein Cages, OIST, Jan 16, 2016, Invited Speaker,Cryo-EM Workshop, August 8-9, 2018, New York, New York. ChinaGraph, November 9-11, 2018, Guangzhou, China, International Conference on Machine Learning and Data Science (ICML & DS 2018), December 21-22, 2018, Invited Speaker, “Spatio-Spectral Tensor Super-resolution” New York University, NY, January 24, 2019, Invited Speaker, “Spatio-Spectral Tensor Super-resolution” Stony Brook University, NY, January 25, 2019, Invited Speaker “Spatio-Spectral Tensor Super-Resolution with Chemical Priors” SIAM Conference on Computational Science and Engineering, February 25–March 1, 2019, Spokane, Washington “ Are Spline Kernels Useful”, University of Chicago, May 15-May 19, 2019, “Learning to Sample and Sampling to Learn”, Amazon, Seattle, June 8-16, 2019, “Computation, Mathematics, and Statistics for Visual Search Applications”, Univeristy of Peking- Beijing, China, July· 2019, “Computation, Mathematics, and Statisics for Visual Search Applications”, July 1-13, 2019, University of Peking-Beijing, China, ALBERT:A digital Pathology Electronic Assistant, August 2-4, 2019, UT Southwestern Medical center- Dallas and Univ of Oklahoma [Plenary] Statistical Deep Learning for Automatic 2D and 3D Cytotyping of tumor tissue-. Cold Spring Harbor- Asia conference, Shanghai, China, September 4, 2019, “Learning to Sense, Model. And Predict”. Shanghai Jai Tong University- Shanghai, China, September 6, 2019, [Plenary] “Learning the Koopman Operator for Dynamic Simulations”, Workshop on Digital Twins, University of Luxembourg, September 9-13, 2019, “Deep Learning Koopman Operator for Dynamic Data”, Georgia Tech at Atlanta, Ga. Sept 17, 18, 2019, “Deep Learning for Static and Dynamic Data” Colloquium talk, NYU Data Sciences, Sept 27, 2019, “Deep Learning Koopman Modes for Dynamic Data” Colloquium talk, Princeton University, Sept 30, 2019, Learning to Correct Form and Function with Reinforcement, The 2nd TBSI Workshop on Learning Theory (TBSI-WOLT’20) July 20-22, 2020, Deep Learning to Correct Form and Function with Reinforcement, New Jersey Institute of Tech, December 9, 2020, Hyderbad, India, Numerical Geometry, Grid Generation and Scientific Computing, Moscow, November 2020, [Keynote] - “Learning Rank-Ordered Intelligent Search Policies with Minimal Uncertainty” Emerging Techniques in Computational Intelligence, Co-Sponsored by the IEEE Computational Intelligence Society, Ecole Centrale School of Engineering, Mahindra University, Hyderabad, India, August 25-27, 2021

- Collaborative Teaching Grant Award (Dr. D. Briscoe) for BIO-(In)formatic Architecture Modeling in Architectural Design (ARC350R/ARC386M/CS378, Spring 2016, Funded by Learning Sciences, Provost Teaching Fellows.
- Member of BIMOS Scientific Advisory Board, Berlin Germany 2015 –
- Society for Industrial and Applied Mathematics- Fellow-2016
- Pioneer Award on Solid Modeling from Solid Modeling Association, July, 2016
- Distinguished Alumni Award, Indian Institute of Technology, Delhi, Aug, 2016
- Moncrief Grand Challenge Faculty Award, Institute for Computational Engineering and Sciences, 2014, 2016
- Member of Scientific Advisory board, Indian Institute of Technology, Delhi, 2018 –
- Honored with a Bountiful Tree at Trees for Tigers, Panna Tiger Reserve, Madhya Pradesh, India for delivering the talk during the IEEE CS-BITS GOA APPCAIR joint Webinar Series- 2021

EDITORIAL BOARDS

- ACM Computing Surveys (CSUR)- 2016-
- International Journal of Computational Geometry and Applications- 2005-
- Committee member of Multidisciplinary Mid-Term Review Panel(CIHR)
- Natural Sciences and Engineering Research Council (NSERC)
- Humanities Research Council (SSHRC) – 2021
- CFREF- (Canada First Research Excellence Fund) Review Panel for York University-2021

ACADEMIC ACTIVITIES

My current research is on the computer science and computational mathematics foundations of statistical and dynamic decision making, learning dynamical systems and exploratory visualization. I develop machine learning and geometric optimization algorithms for applications in the physical, chemical, health and environmental data sciences, medicine and neuro-morphic computing. I revisit my past research in modeling multi-scale form and function, through the lens of inferential data sciences,. My current research projects include (a) forward and inverse optimization problems in microscopy, spectroscopy, electro-magnetic and electro-optical wide spectrum imaging; (b) generative shape and new material design for spatially realistic and phenomenological models; (c) learning from nature and generating models and mechanisms with accelerated and emergent properties. I teach an undergraduate course titled “Geometric Foundations of Data Sciences” and a graduate course titled “Predictive Machine Learning”. I have courtesy appointments and supervise undergraduates, M.S. and Ph.D. students from several UT departments, including biomedical and electrical engineering, neuroscience, and mathematics.

The following is a link is to my most cited publications :

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. S. Abhyankar, C. Bajaj (1987). "Automatic Parameterization of Rational Curves and Surfaces I: Conics and Conicoids", *Computer Aided Design,* 19(1):11-14
4. S. Abhyankar, C. Bajaj (1987). "Automatic Parameterization of Rational Curves and Surfaces II: Cubics and Cubicoids", *Computer Aided Design,* 19(9):499-502

5. M. Atallah, C. Bajaj (1987). "Efficient Algorithms for Common Transversals", *Information Processing Letters,* 25(2):87-91
6. C. Bajaj (1987). "Geometric Optimization and the Polynomial Hierarchy", *Theoretical Computer Science*, 54(1):87-102
7. S. Abhyankar, C. Bajaj (1988). "Automatic Parameterization of Rational Curves and Surfaces III: Algebraic Plane Curves", *Computer Aided Geometric Design,* 5(4):309-321
8. M. Wu, C. Bajaj, C. Liu (1988). "Face Area Evaluation Algorithm for Solids", *Computer Aided Design,* 20(2):75-82
9. C. Bajaj, T. Moh (1988). "Generalized Unfoldings for Shortest Paths in Euclidean 3-Space", *International Journal of Robotics Research,* 7(1):71-76
10. 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
11. C. Bajaj (1988). "The Algebraic Degree of Geometric Optimization Problems", *Discrete and Computational Geometry,* 3(1):177-191
12. C. Bajaj, C. Hoffmann, R. Lynch, J. Hopcroft (1988). "Tracing Surface Intersections", *Computer Aided Geometric Design,* 5(4):285-307
13. S. Abhyankar, C. Bajaj (1989). "Automatic Parameterization of Rational Curves and Surfaces IV: Algebraic Space Curves", *ACM Transactions on Graphics,* 8(4):325-334
14. C. Bajaj, M. Kim (1989). "Generation of Configuration Space Obstacles: The Case of Moving Algebraic Curves", *Algorithmica,* 4(1):157-172
15. C. Bajaj, M. Li (1989). "Geometric Optimization and D^P -Completeness", *Discrete and Computational Geometry*, 4(1):3-13. Abstract appears in *Zentralblatt fur Mathematik.*
16. C. Bajaj (1990). “Rational Hypersurface Display”, *Computer Graphics*, 24(2), 117-127
17. C. Bajaj, M. Kim (1990). "Convex Hulls of Objects bounded by Algebraic Curves", *Algorithmica,* 6(1):533-553
18. 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
19. C. Bajaj, T. Dey (1990). "Polygon Nesting and Robustness", *Information Processing Letters,* 35(1):23-32
20. C. Bajaj, T. Dey (1990). “Robust Computations of Polygon Nesting”, *International Workshop on Discrete Algorithms and Complexity*, 33-40
21. J. Johnstone, C. Bajaj (1990). "Sorting Points along an Algebraic Curve", *Siam Journal on Computing,* 19(5):925-967
22. C. Bajaj, I. Ihm (1992). "Algebraic Surface Design with Hermite Interpolation", *ACM Transactions on Graphics,* 11(1):61-91
23. C. Bajaj, T. Dey (1992). "Convex Decomposition of Polyhedra and Robustness", *Siam Journal on Computing,* 21(2):339-364
24. T. Dey, K. Sugihara, C. Bajaj (1992). "Delaunay Triangulations in Three Dimensions with Finite Precision Arithmetic", *Computer Aided Geometric Design,* 9(6):457-470
25. T. Dey, C. Bajaj, K. Sugihara (1991). "On Good Triangulations in Three Dimensions", *International Journal of Computational Geometry and Applications,* 2(1):75-95
26. C. Bajaj, I. Ihm (1992). "Smoothing Polyhedra using Implicit Algebraic Splines", *Computer Graphics, 26(2):79-88.*
27. C. Bajaj, J. Canny, T. Garrity, J. Warren (1993). "Factoring Rational Polynomials over the Complexes", *Siam Journal on Computing,* 22(2):318-331
28. 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
29. V. Anupam, C. Bajaj, D. Schikore, M. Schikore (1994). "Distributed and Collaborative Visualization", *IEEE Computer,* 27(7)37-43
30. C. Bajaj, G. Xu (1994). "NURBS Approximation of Surface/Surface Intersection Curves", *Advances in Computational Mathematics,* 2(1):1-21
31. 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
32. V. Anupam, C. Bajaj (1994). "SHASTRA: Multimedia Collaborative Design Environment", *IEEE Multimedia,* 1(2):39-49
33. 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
34. C. Bajaj, A. Royappa (1995). "Finite Representations of Real Parametric Curves and Surfaces", *International Journal of Computational Geometry and Applications,* 5(3):313-326

35. C. Bajaj, J. Chen, G. Xu (1995). "Modeling with Cubic A-patches", *ACM Transactions on Graphics,* 14(2):103-133
36. C. Bajaj, E. Coyle, K. Lin (1996). "Arbitrary Topology Shape Reconstruction from Planar Cross Sections", *Graphical Models and Image Processing,* 58(6):524-543
37. C. Bajaj, G. Xu (1997). "Piecewise Rational Approximation of Real Algebraic Curves", *Journal of Computational Mathematics,* vol. 15(1):55-71
38. C. Bajaj, F. Bernardini, G. Xu (1997). "Reconstructing Surfaces and Functions on Surfaces from Unorganized Three-Dimensional Data", *Algorithmica,* 19(1):243-261
39. C. Bajaj, G. Xu (1997). "Spline Approximations of Real Algebraic Surfaces", *Journal of Symbolic Computation, Special Isssue on Parametric Algebraic Curves and Applications,* 23(23):315-333
40. C. Bajaj, R. Holt, A. Netravali (1998). "Rational Parameterizations of Nonsingular Real Cubic Surfaces", *ACM Transactions on Graphics,* 17(1):1-31
41. E. Sacks, C. Bajaj (1998). "Sliced Configuration Spaces for Curved Planar Bodies", *International Journal Of Robotics Research,* 17(6):639-651
42. C. Bajaj, D. Schikore (1998). "Topology Preserving Data Simplification with Error Bounds", *Journal on Computers and Graphics,* 22(1):3-12
43. 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
44. 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
45. 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
46. 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
47. C. Bajaj, J. Chen, R. Holt, A. Netravali (1999). "Energy Formulations of A-Splines", *Computer Aided Geometric Design,* 16(1):39-59
48. 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
49. 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
50. 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
51. C. Bajaj, I. Ihm, S. Park (2000). "Compression-Based 3D Texture Mapping for Real-Time Rendering", *Graphical Models,* 62(6):391-410
52. C. Bajaj, A. Royappa (2000). "Parameterization in Finite Precision", *Algorithmica,* 27(1):100-114
53. G. Xu, C. Bajaj, W. Xue (2000). "Regular algebraic curve segments (I)-Definitions and characteristics", *Computer Aided Geometric Design,* 17(6):485-501
54. G. Xu, C. Bajaj, C. Chu (2000). "Regular Algebraic Curve Segments (II) - Interpolation and Approximation", *Computer Aided Geometric Design,* 17(6):503-519
55. C. Bajaj, I. Ihm, S. Park (2001). "3D RGB Image Compression for Interactive Applications", *ACM Transactions on Graphics,* 20(1):10-38
56. G. Xu, H. Huang, C. Bajaj (2001). "C1 Modeling with A-patches from Rational Trivariate Functions", *Computer Aided Geometric Design,* 18(3):221-243
57. 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
58. H. Pfister, B. Lorenson, C. Bajaj, G. Kindlmann, W. Schroeder, L. Avila, K. Raghu, R. Machiraju, J. Lee (2002). "The Transfer Function Bake-off", *IEEE Computer Graphics and Applications,* 21(3):16-22
59. C. Bajaj, S. Schaefer, J. Warren, G. Xu (2002). "A Subdivision Scheme for Hexahedral Meshes", *The Visual Computer,* 18(5):343-356
60. 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
61. C. Bajaj, G. Xu, R. Holt, A. Netravali (2002). "Hierarchical Multiresolution Reconstruction of Shell Surfaces", *Computer Aided Geometric Design,* 19(2):89-112

62. 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
63. W. Blanke, C. Bajaj (2003). "Active Visualization in a Multidisplay Immersive Environment", *Computers & Graphics,* 27(5):681-691
64. C. Bajaj, G. Xu (2003). "Anisotropic Diffusion of Surfaces and Functions on Surfaces", *ACM Transactions on Graphics,* 22(1):4-32
65. 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
66. G. Xu, C. Bajaj (2003). "Curvature Computations of 2-manifolds in R^k", *Journal of Computational Mathematics,* 21(5):681-688
67. 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*.
68. C. Bajaj, A. Netravali (2003). "NURBS Approximation of A-splines and A-patches", *International Journal of Computational Geometry and Applications,* 13(5):359-390
69. 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
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71. 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
72. 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
73. Z. Yu, C. Bajaj (2004). "Detecting Circular and Rectangular Particles Based on Geometric Feature Detection in Electron Micrographs", *Journal of Structural Biology,* 145(1-2):168-180, doi: 10.1016/j.jsb.2003.10.027, http://tinyurl.com/PMID15065684, PMID: 15065684, PMC Journal In Process
74. Y. Song, Y. Zhang, T. Shen, C. Bajaj, J. McCammon, N. Baker (2004). "Finite Element Solution of the Steady-State Smoluchowski Equation for Rate Constant Calculations", *Biophysical Journal*, 86(4):2017-2029, doi: 10.1529/biophysj.106.102533, http://tinyurl.com/PMC1304055, PMCID: PMC1304055
75. 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, PMCID: PMC2782869.
76. 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, PMCID: PMC2805201
77. 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, PMCID: PMC2748876
78. C. Bajaj (2005). "A Laguerre Voronoi Based Scheme for Meshing Particle Systems", *Japan Journal of Industrial and Applied Mathematics, (JJIAM),* 22(2):167-177, doi: 10.1.1.73.9956, http://tinyurl.com/PMC2865151a , PMC2865151
79. 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
80. 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
81. 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, PMCID: PMC2761001

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83. 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, PMCID: PMC2740490
84. 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, PMCID: PMC2561295
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54. "Resolution Adaptive Spline Modeling for Rapid Poisson Boltzmann Molecular Electrostatics", (with A. Chen), *CS Technical Report TR-08-12, the University of Texas at Austin, 2008*
55. "F3Dock: A Fast, Flexible and Fourier Based Approach to Protein-Protein Docking", (with R. Chowdhury, V. Siddahanavalli), *CS Technical Report TR-08-01, The University of Texas at Austin, 2008*
56. "Packing Grids for Rapid Protein Interfaces", (with R. Chowdhury), *CS Technical Report TR-08-02, The University of Texas at Austin, 2008*
57. "Fast Molecular Solvation Energetics and Forces Computation", (with W. Zhao), *ICES Technical Report TR-08-20, The University of Texas at Austin, 2008*
58. "Spatically Realistic Human Heart Finite Element Models from Medical Imaging", (with S. Goswami), *ICES Technical Report TR-08-01, The University of Texas at Austin, 2008*
59. "CUDA Accelerated Multi-Domain Volumetric Image Segmentation and Using a Higher Order Level Set Method", (with O. Sharma, F. Anton, Q. Zhang), *ICES Technical Report TR-09-23, The University of Texas at Austin, 2009*
60. "Efficient and Higher-Order Fast Multipole Boundary Element Method for Poisson Boltzmann Electrostatics", (with A. Chen), *ICES Technical Report TR-09-20, The University of Texas at Austin, 2009*
61. "Stable Mesh Decimation", (C. Bajaj, A. Gillette, Q. Zhang), Oct 8, 2009, arXiv:0910.1402
62. "Complementary Space for Enhanced Uncertainty and Dynamics Visualization", (C. Bajaj, A. Gillette, S. Goswami, B. J. Kwon, J. Rivera), Oct 20, 2009, arXiv:0910.4084
63. "Computational Inversion of Electron Tomography Images Using L2-Gradient Flows", (with G. Xu, M. Li, A. Gopinath), *ICES Technical Report TR-10-11, The University of Texas at Austin, 2010,* NIHMSID 266229, (PMCID: PMC4188448)
64. "Error Estimates for Generalized Barycentric Interpolation", (A. Gillette, A. Rand, C. Bajaj), Apr 15, 2011, arXiv:1010.5005, Adv Comput Math, 2012 Oct 1; 37(3): pp 417–439, doi: 10.1007/s10444-011-9218-z NIHMSID: NIHMS283685, PMCID: PMC3549276
65. "Dual Formulations of Mixed Finite Element Methods with Applications", (A. Gillette, C. Bajaj), May 11, 2011, arXiv:1012.3929
66. "On a Nanoscopically-Informed Shell Theory of Single-Wall Carbon Nanotubes", (C. Bajaj, A. Favata, P. Podio-Guidugli), Nov 19, 2011, arXiv:1111.4574
67. "Quadratic Serendipity Finite Elements on Polygons Using Generalized Barycentric Coordinates", (A. Rand, A. Gillette, C. Bajaj), Jul 20, 2012, arXiv:1012.3929
68. "Interpolation Error Estimates for Mean Value Coordinates over Convex Polygons", (A. Rand, A. Gillette, C.

Bajaj), Sep 18, 2012, arXiv:1111.5588, (PMCID: PMC37667007)

69. "Construction of Scalar and Vector Finite Element Families on Polygonal and Polyhedral Meshes", (A. Gillette, A. Rand, C. Bajaj), May 27, 2014, arXiv:1405.6978
70. "On Low Discrepancy Samplings in Product Spaces of Motion Groups", (C. Bajaj, A. Bhowmick, E. Chattopadhyay, D. Zuckerman), Nov 28, 2014, arXiv:1411.7753
71. "On the construction of general cubature formula by flat extensions", (Marta Abril Bucero (INRIA Sophia Antipolis), C. Bajaj, B. Mourrain (INRIA Sophia Antipolis)), Jun 9, 2015, arXiv:1506.00085, Linear Algebra and its Applications, Special Issue, August 1, 2016, Vol 502, pp. 104-125, Structured Matrices: Theory and Applications, http://dx.doi.org/10.1016/j.laa.2015.09.052, (PMCID: PMC4995016)
72. "Characterization and Construction of a Family of Highly Symmetric Spherical Polyhedra with Application in Modeling Self-Assembling Structures", (M. Rasheed, C. Bajaj), Jul 30, 2015, arXiv:1507.08374
73. "Quantifying and Visualizing Uncertainties in Molecular Models", (M. Rasheed, N. Clement, A. Bhowmick, C. Bajaj**),** Aug 17, 2015, arXiv:1508.03882,
74. "Higher Order Mutual Information Approximation for Feature Selection", (J. Wu, S. Gupta, C. Bajaj), Dec 2016, *arXiv:1612.00554*
75. "Sampling Conditions for Conforming Voronoi Meshing by the VoroCrust Algorithm", A. Abdelkader, C. L. Bajaj, M. S. Ebeida, A. H. Mahmoud, S. A. Mitchell, J. D. Owens, A. A. Rushdi, Mar 2018, *ArXiv:1803.06078*
76. C. L. Bajaj, T. Wang, Blind Hyperspectral-Multispectral Image Fusion via Graph Laplacian Regularization Feb 2019, *Arxiv:1902.08224*
77. C. Bajaj, Y. Wang, T. Wang, July 2019, SketchyCoreSVD: SketchySVD from Random Subsampling of the Data Matrixz",. *http://arxiv.org/abs/1907.13634*
78. T. Chen, Y Wang J Zhou, S. Liu, S. Chang, C. Bajaj, Z. Wang, Can 3D Adversarial Logos Cloak Humans?, arXiv:2006.14655, November 2020, https://arxiv.org/pdf/2006.14655.pdf
79. Y. Yang, Y. Zheng, Y. Wang, and C. Bajaj, arXiv:2014.00253, April 2021 Learning Deep Latent Subspaces for Image Denoising, https://arxiv.org/abs/2104.00253
80. A. Maesumi, M. Zhu, Y. Wang, T.Chen, Z. Wang, and C.Bajaj, Learning Transferable 3D Adversarial Cloaks for Deep Trained Detectors April 2021, https://arxiv.org/abs/2104.11101
81. Y. Diao, O. Zhao, P. Kothapalli, P. Monteleone, C. Bajaj- Deep Predictive Learning of Carotid Stenosis Severity July 31, 2021- https://arxiv.org/abs/2108.00296
82. Chandrajit Bajaj, Avik Roy, Haoran Zhang- Invariance-based Multi-Clustering of Latent Space Embeddings for Equivariant Learning July 25, 2021- https://arxiv.org/abs/2107.11717
83. Chandrajit Bajaj, Luke McLennan, Timothy Andeen, Avik Roy, Robust Learning of Physics Informed Neural Networks October 26, 2021, https://arxiv.org/abs/2110.13330,
84. Bajaj C, Wang Y, Yang Y, Zheng Y, Recursive Self-Improvement for Camera Image and Signal Processing Pipeline ArXiv, Nov 2021 http://arxiv.org/abs/2111.07499
85. Bajaj C, Nguyen M, Learning Optimal Control with Stochastic Models of Hamiltonian , November 2021, ArXiv, http://arxiv.org/abs/2111.08108
86. S. Chockchowwat, C. Bajaj, Probabilistic PolarGMM: Unsupervised Cluster Learning of Very Noisy Projection Images of Unknown Pose,arXiv:2206.12959- June 2022, https://arxiv.org/abs/2206.12959
87.

RESEARCH GRANTS & CONTRACTS

1. 8/1/86 - 1/31/89 "Automating Robots for Intelligent Manufacturing", ($81,000), National Science Foundation, MIP-8521356
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
12. 7/1/91 - 12/31/91 "Efficient Algorithms and Data Structures for Geometric Design", ($30,000), Air Force Office of Scientific Research, AFOSR-91-0276
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
15. 1/1/92 - 12/31/92 "Efficient Algorithms and Data Structures for Geometric Design", ($62,984), Air Force Office of Scientific Research, AFOSR-91-0276
16. 8/14/92 - 8/13/93 "Collaborative Geometric Design", ($9,900), Purdue Research Foundation, David Ross Grant
17. 1/1/93 - 12/31/93 "Shape Optimization in a Distributed and Collaborative Modeling Environment", ($30,000), NASA Langley Research, NAG-1-1473
18. 9/1/91 - 8/31/94 "Algorithmic Algebraic Geometry", ($367,035), National Science Foundation, DMS-9101424, (with S. Abhyankar)
19. 8/14/93 - 8/13/94 "Collaborative Geometric Design", ($9,900), Purdue Research Foundation, David Ross Grant
20. 9/1/91 - 8/31/94 "Algorithmic Algebraic Geometry", ($4,000), National Science Foundation, REU - DMS-9101424
21. 4/1/93 - 3/31/94 "Geometric and Solid Modeling with Algebraic Surfaces", ($10,000), National Science Foundation, REU - CCR-9222467
22. 2/1/93 - 1/31/95 "Efficient Algorithms and Data Structures for Geometric Design", ($179,441), Air Force Office of Scientific Research, F49620-93-1-0138
23. 4/1/93 - 3/31/96 "Geometric and Solid Modeling with Algebraic Surfaces", ($222,665), National Science Foundation, CCR-9222467
24. 10/1/93 - 9/30/96 "Efficient Algorithms and Data Structures for Geometric Design", ($119,750), Air Force Office of Scientific Research, AASERT F49620-93-1-0138
25. 10/1/93 - 9/31/96 "Modeling and Visualization for Polymers, Surfaces and Biomolecules", ($248,491), Air Force Office of Scientific Research, F49620-94-1-0080
26. 1/1/94 - 12/31/96 "Modeling and Simulation in a Reconfigurable Distributed Virtual Environment", ($375,000), Office of Naval Research, N00014-94-1-0370
27. 11/1/94 - 10/31/96 "A Collaboratory for Distributed Virtual Environments", ($150,000), Army Research Office, DAAH04-95-1-0008
28. 8/14/95 - 8/13/96 "Deformable Modeling", ($9,900), Purdue Research Foundation, Davis Ross Grant
29. 4/14/95 - 4/13/96 "High Performance Networks & Visualization", ($150,00), National Science Foundation, CDA-9422038 , (with J. Rice, E. Houstis, D. Marinescu, V. Rego)
30. 6/1/95 - 12/31/97 "Modeling and Simulation in a Recongurable Distributed Virtual Environment", ($100,778), Office of Naval Research, AASERT N00014-94-1-0370
31. 12/16/95 - "3D FAX", (with A. Chaturvedi), ($25,000), American Telephone and Telegraph, AT & T 730-1398-3000
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 – 08/31/21 "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. 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
73. 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)
74. 06/06/2016 - 12/31/2017 "Polar Sampling and Optimization of Protein-Ligand Cocrystal 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)
75. 09/30/2020-12/312023 Intelligent Machine Learning for Real- Time Processing of Hyperspectral Video Streams- Army Futures Command-DOD-ARMY- Project Number W911NF1920333, PO7 ($1,873,000.00)
76. 2/1/2021-01/31/2022 A Deep Learning Framework for Event Based Anomaly Detection- IFML-UT Austin, Univ of Wash, Wichita State and Microsoft- $50,000 (direct costs).
77. 7/1/2021-6/30/2023 "Deep Learning of Pancreas MRI to Predict Progression of T1D" with Jack Virostko, (UT) NIH- 1RO3DK12997901 ($317,000)
78. 9/1/2021-8/31/202. "Development of advanced machine (deep) learning algorithms to rapidly detect and accurately estimate the percentage of melanocytes expressing Mart1-Ki67 in borderline melanocytic lesions, and PDL1-in tumor cells, using double staining with tumor specific makers", with Phyu Aung(MDACC), MD Anderson Cancer Center (MDACC)- ($50,000 direct costs) .
79. In-Kind gift from Jim Holland/Backcountry.com, $200,000.

MULTIMEDIA

1. A. Abdelkader, C. Bajaj, M. Ebeida, A. Mahmoud, S. Mitchell, J. Owens, A. Rushdi "VoroCrust Illustrated: Theory and Challenges". 2018 , pp. 77:1-77:4, 99

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), Bangok, Thailand, SIGGRAPH ASIA 2017 (https://sa2017.siggraph.org/attendees/symposium-on-visualization)
46. Berlin International Graduate School in Model and Simulation based Research- Scientific Advisory Board 2019, November 25th and 26th, 2019.
47. Data Science Faculty Recruiting committee- December 5, 2019
48. Ad Hoc Committees- 2019/20- Press
49. Ad Hoc Committee- 2019/20Vouga
50. CNS committee- 2019- NTT P&T committee
51. CSEM Admissions committee- 20-21
52. Moncrief recruiting committee- 20-21
53. CSEM Data Science Chair Recruiting Committee - 20-21
54. CS Student Assessment committee- 20-21

55. Committee member of the multidisciplinary Mid-Term Review Panel-Canadian Institute of Health Research(CIHR), (Natural Sciences and Engineering Research Council(NSERC) and Humanities Research Council(SSHRC)- April 21-23, 2021-
56. Chair the CFREF Review Panel for York University(Spring 2021)
57. Faculty Mentor for CSE Certification program-2021
58. Advisory Board- Advances in Data-driven Computing and Intelligent Systems (ADCIS) March 2022

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

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
43. Computer Sceince, Engineering & Mathematics (CSEM) Admissions Committee 2017-2018

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
11. CS378 Geometric Foundations of Data Science, Fall 2018
12. Fall 2018 C S 399W Dissertation (Graduate)
13. Fall 2018 CSE 370 Individual Reading & Research (Undergraduate)
14. Fall 2018 CSE 392 Geometric Fndtns Of Data Sci (Graduate)
15. Fall 2018 CSE 698A Thesis (Graduate)
16. Fall 2018 M 392C Geometric Fndtns Of Data Sci (Graduate)
17. Spring 2019 C S 379H Computer Science Honors Thesis (Undergraduate)
18. Spring 2019 C S 395T Comp Stat Appl In Data Sci (Graduate)
19. Spring 2019 C S 399W Dissertation (Graduate)

20. Spring 2019 CSE 370 Individual Reading & Research (Undergraduate)
21. Spring 2019 CSE 383M Stat/Discrete Meths Sci Comput (Graduate)
22. Spring 2019 CSE 698B Thesis (Graduate)
23. Spring 2019 E E 697C Research Problems (Graduate)
24. Spring 2019 M 393C Stat/Discrete Mthd Sci Comp (Graduate)
25. Spring 2019 SDS 389R Graduate Research (Graduate)
26. Summer 2019 C S W379H Computer Science Honors Thesis (Undergraduate)
27. Summer 2019 CSE W390 Individual Research (Graduate)
28. Fall 2019 CS 379H Computer Science Honors Thesis
29. Fall 2019 CS 399W Dissertation
30. Fall 2019 EE 398R- Master's Report-Se-
31. Fall 2019 CSE 370- Individual Reading and Research
32. Spring 2020 CSE 370F- Undergraduate Research & Writing
33. Spring 2020-CS 378-Geometric Fndtns of Data Sci
34. Spring 2020- CS395T-Machine Learn in Data SCIS
35. Spring 2020-M 392C Geometric Fndtns of Data Sci
36. Spring 2020-M 393C Stat/Discrete Mthd Sci Comp
37. Spring 2020-CSE 383M Stat/Discrete Meths Sci Compu
38. Spring 2020- CS 395T- Comp Stat Appl In Data Sci
39. Spring 2020- CS 399W- Dissertation
40. Spring 2020- CSE 370 Undergrad Reading and Research
41. Spring 2020- CS 390 Individual Reading(Grad)
42. Spring 2020-PHY 341 Geometric Foundations of Data Science
43. Spring 2020- M375- Conference course (undergraduate)
44. Summer 2020 CSE 370- Individual Reading and Research(undergrad)
45. Summer 2020 CSW 395- Conference Course
46. Summer 2020 CSE S370- Individual Reading and Research
47. Fall 2020- CSE 390-Individual Reading
48. Fall 2020- CSE 392- Foundations of Predictive Machine Learning
49. Fall 2020- CSE 392- Geometric Foundations of Data Science-Wb
50. Fall 2020- M-392C- Geometric Foundations of Data Science
51. Fall 2020- M-392C- Foundations of Predictive Machine Learning
52. Fall 2020- Phy 341- Geometric Foundations of Data Science
53. Fall 2020- SDS 379R- Undergraduate research
54. Spring 2021- CSE 390-Individual Reading
55. Spring 2021- CSE 392- Foundations of Predictive Machine Learning
56. Spring 2021- CSE 392- Geometric Foundations of Data Science-Wb
57. Spring 2021- M-392C- Geometric Foundations of Data Science
58. Spring 2021- M-392C- Foundations of Predictive Machine Learning
59. Spring 2021- Phy 341- Geometric Foundations of Data Science
60. Spring 2021- SDS 379R- Undergraduate research
61. Spring 2021- CSE 398R- Master's Report
62. Summer 2021- CSE W 390- Individual Research
63. Spring 2022- CSE 392 - Geometric Foundations of Data Sciences and Predictive Machine Learning
64. Spring 2022- CS 378- Geometric Foundations of Data Sciences and Predictive Machine Learning
65. Spring 2022- M 392C- Geometric Foundations of Data Sciences and Predictive Machine Learning

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 Siddahanavalli, 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 (Research Scientist at CD-Adapco, Austin, Texas)

Ph.D. Students in Progress (Chair-Supervisor)

Nathan Clement, 2015-
Yi Wang- CSEM ,PhD- 2018-present-
Ryan Farrell(Operational Research and Industrial Engineering)- Fall 2021-
Minh Nguyen- Fall 2021 - PhD-Math
Taemin Heo- CS- 2021 Masters- Computational Science Certificate-Graduated- now in PhD program
Luke McLennan- CSEM- Fall 2022
Aaron Dominick (1st year Phd-Biomed Engineering) March 2022- Summer 2022- Research rotations

Ph.D. Students (Committee Member)

Jeff Manning, ECE-2017 – 2020- Graaduated Spring 2020-
Xiangru Huang, CS Fall 2019 -
Jiong Zhang- CSE-Spring 2019-
Dilin Wang, CS- 2018 -2020- Graduated Summer 2020
Shu-Wei Tsao-Physics- Spring 2020-
Therese Eileen Paoletta- Physics- Spring 2021
Jong Won Ma-CE- Spring 2021
Sumit Sinha-PhD-Fall 2020- Present- Physics and Machine Learning
Avik Roy-PhD- Graduated Summer 2021- Physics- physics informed deep learning

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)
Dr. Tianming Wang 2018-2020 (Currently Asso. Prof in Southwestern Univ of Finance and Econ in Chengdu of China)

PostDoc Students in Progress
Ahmed Abdelrazek (Sept 2020-Present)
Mohamed Abouhawwash- Oct 2021-

Completed MS STUDENTS

Katherine Clarridge, (BME), May 2006
Alex Mollere, (CSEM), May 2009
Jesse Sweet, (Math), May 2008
Bharadwaj Subramaniam, (CSEM), May 2010
Yu Lu (Physics) Dec 2018
Haoran Zhang 2019-2020
Richard Matthews- Fall 2020- CS- Master's thesis
Akshay Varanasi (CSEM), 2018-2019
Taemin Heo- CS- 2021 Masters- Computational Science Certificate-Graduated- now in PhD program
Chase Tessmer - CSEM--Spring 2019 –Summer 2021
Shijing Zhong- CSE-Spring 2020-
Michael Andrew Davis- ECE-Fall 2019-
Yunhao Yang-Masters- Fall 2020- CS/Math- to graduate in May 2022

MS Students in Progress
Yorick Sanders- Masters 2020-2021- Computer Science-
Rochan Avlur-Masters-Spring '21 Computer Science-
Sean Zanyk McLean- Master's Fall 2021- present- CSEM
Shubham Bhardwaj- MS-CS-2022

UNDERGRADUATE RESEARCH STUDENTS (Chair)

Undergraduate Students

Nona Sirakova (CS) August 2012
David Moench (CS), August 2014
Suchith Vuppala (CS), May 2014
Pragati Prasad (CS), August 2014
Holim Lee (CS) <*date*>
Huijin Kim (CS) <*date*>
Chetan Kumar, (BME) <*date*>
Keerthana Kumar (CS) <*date*>
Chand John (CS) <*date*>
Balaz Kustar (Mathematics) Independent study-August 2019-Turing Scholar Thesis
Benny Meltzer (Math) Graduated- Dec 2019
Supawit Chockchowwat (CS) Graduated-May 2020- Turing Scholar. now in University of Illinois PhD Program
Andrew Davis (ECE) Dec 2019, Demetrius Rowland (ECE), Dec 2019,
Minghan Yu(Math)- 2020, Binglin Zhang(Math) 2020, Eshani Kaul(CS)- 2020, Shijing Zhong- 2020

Yunhao Yang- 2020 (Summer Moncrief Student), Tarun Thummala(CS), Tyler Parker (CSEM) May 2020, Matt Hall-2020, Abhjjit Raman- 2020, Aditya Gadiyar- 2020, Benjamin Beal(CS) , David Benny, Jonathan Randall-(CS), Kevin Jin- Conrad Li(CS), Nithin Anumala(CS), Pranav Eswaran(CS), Kevin Jin, Shamira Kabir, Shikhar Gupta(CS), Yuhan Zheng, Tyler Miller, Conrad Li- (CS), Benjamin Beal-(CS), Joshua Prupes, Nithin Anumala-2020, Pranav Eswaran-2 Ryan Bethke-(CS and Spanish), William Gross(CS), Abhishek Dayal(CS/Math), Shikhar Gupta(CS), Eshani Kaul, Arman Maesumi, Theodore Morales(CS), Mingkang Zhu, Abrar Anwar(CS), Binglin Zhang
Harrison White(ME), Nikhil Ajjarapu(CS)-AFC, Edward Zhou(Math)
Luke McLennan(Moncrief Summer Intern), Omatharv Vaidya, Yash Totlani, Sumit Sinha(physics), Vineet Yang, Edward Zhou(Math), Soumil Chopra(Biomedical engineering), Zachary Endres, Yunhao Zheng, Akash Suruvu, Ariaan Ghatate(HS), Dangyan Zhang, Krishna Reddy(CS), Priyansh Kedia(UG-India), Thomas Ghorbania, Sebastian Rutherford, Supawit Chockhowat, Amrutha Srinivasan(Biomedical Engineering), Trevor Nguyen(CS-Turing)-grad date- May 2022) George Zhai, Trung Nguyen, Pronoma Banerjee, Qing Zhu- Summer 2022

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, Math. (Ph.D. Chair Dr. Ronald Hadani)
Itamar Gal (Ph.D. Chair Dr. Rachel Ward)
Jeff Manning (Ph.D. Chair Ross Baldick, ECE), 2019
Jiong Zhang (Ph.D. Chair Inderjit Dhillon, CS), 2018
Madeline Folkerts (MS. Supervisor, BME), 2018

Oden Institute/Computational Visualization Center Visitors

2022/23 J-1 visitor- Omathrav Vaidya- August 15 2022- August 14 2023
2022: Yuehaw Khoo- JTO Oden Faculty Fellow- June 6-June 20
18-19: Dr. Krzysztof Gajowniczek, Warsaw Univerisity of Life Sciences (Spring 2019)
18-19: Dr. Bong-Soo Sohn, Chung-Ang University, (JTO, 2019)
18-19- Benjamin Berkels and Bong-Woo Sohn.O
17-18 Ruslan Akhmetvaleev, Moscow (Fulbright 2018)
17-18: Dr. Chand John, Stanford University, (Summer 2018)
17-18: Bernard Mourrain, Gerrit Welper, Paolo Podio-Guidugli, Bong Soo Sohn, Abel Gomes
16-17: Gerrit Welper, Benjamin Berkels
15-16: Bernard Mourrain, Paolo Podio-Guidugli, Eliot Fried, Tamal Dey
14-15: Gitta Kutynoik, Bernard Morrain, Antje Vollrath, John Edwards
13-14: Rohit Bhargava, Jaydeep Bardhan
12-13: Antje Vollrath, Bernard Mourrain, Laureano Gonzalez-Vega, Paolo Podo-Guidugli, Antonio Di Carlo, Andrea Micheletti, Paolo Podio-Guidugli, Charles Reynolds
11-12: Wenping Wang, Andrew Gilette, Michael Holst, Paolo Cermelli, Paolo Podio-Guidugli, Yunrong Zhu
10-11: Ozan Oktem, Antje Vollrath, Wenping Wang
09-10: Guoliang Xu, Paolo Podio Guidugli, Luciano Teresi, Sergey Bereg
08-09: Laureano Gonzalez-Vega, Alberto Paouluzzi, Ozan Oktem, Amabile Tatone, Xiaoyu Zhang, Guoliang Xu, Zeyun Yu, Paolo Podio-Guidugli, Antonio DiCarlo
07-08: Insung Ihm, Na Lei, Annie Raoult, Yoel Shkolnisky, Carlos Oscar Sanchez Sorzano, Guoliang Xu, Zeyun Yu
06-07: Alberto Paoluzzi, Sanghun Park, Jorg Peters, Ulrich Reif, Theofanis Strouboulis, Luciano Teresi, Guoliang Xu

05-06: Alberto Paoluzzi, Vladik Kreinovich, Denis Zorin, Tao Ju, David Goodsell, Bong Soo Sohn, Tomoyuki Nishita, Guoliang Xu
04-05: Guoliang Xu, Karol Miller, Shigeru Owada, Xiaoyu Zhang, Insung Ihm, Alberto Paoluzzi

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, 2017) Summer internship; Yufeng Zhang (USTC math, July, 2017); Xi Ye (2017); Mythreya Kuricheti (2018); Abhilash Karpurapu (2018), Aditya Gupta (2018), Jahnavi Vikrama (2018); Maryam Aljeshi (2018); Mohammad Subah (2018); Khalid Aldawood (2018); Simiao Zuo, Moncrief; Charles K. Tusa, Moncrief (2018), Yukang Cao (2019), Luke McLennan (Moncrief) (2021), Kai Chang (Moncrief) (2022)

INVITED CONFERENCE/WORKSHOP/ PLENARY/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, Holetown, Barbados, 1988
16. Workshop on Algorithmic Aspects of Geometry and Algebra, Mathematical Sciences Institute, Cornell University, Ithaca, NY, 1988
17. [KEYNOTE]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. 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, Saarbrucken, 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, Saarbrucken, 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. The Laredo Course on Applications of Symbolic Computing, Laredo, Spain, September 1997
54. Tutorial at Eurographics '97, Budapest, Hungary, September 1997
55. "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. The Conference on New Themes in Computer Aided Geometric Modeling, Tel-Aviv, Israel, February 1998
58. "Freeform Modeling on Vector Fields for Interrogative Visualization", Oberwolfach Germany, Conference on Free Form Surfaces, at the Mathematisches Forschungsinstitut Oberwolfach Seminar , June 1998
59. NSF Large Data Visualization Workshop, Salt Lake City, UT, "Terascale Visualization", May 1999
60. "Vector Topology in Geometric Modeling and Visualization", Symbolic Numeric Computation Conference, Hagenberg, Austria, August 1999

61. Conference on Algebra and Algebraic Geometry with Applications, “Abhyankar Festschrift”, Purdue University, Lafayette, Indiana, June 2000
62. [Keynote] “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. “Subdivision Based Finite Element Solution of Anistropic Diffusion Equations”, IMA Workshop on Geometric Modeling, Minneapolis, MN, April 2001
67. “Scalable Rendering on COTS Clusters”, IMA Workshop on Computer Graphics, Minneapolis, MN, May 2001
68. “Remote Visualization”, TEXGRAPH 01, Houston, TX, May 2001
69. “Anistropic Diffusion in 3D Image Processing”, IPAM Workshop on Geometric Diffusion and Image Processing, Los Angeles, CA, May 2001
70. “Geometry Processing and Visualization in Hierarchical Modeling in Heterogeneous Materials”, Sandia National Lab, Project Grantee Workshop, Albuquerque, NM, May 2001
71. “High Performance Visualization Techniques”, WSCG2002 Conference, Plzen, Czech Republic, February 2002
72. “Algebraic Geometry of Molecular CAD”, Symbolic Computation Workshop, Catania, Italy, March 2002
73. “Algebraic Geometry Computation and Applications”, Workshop, Hefei, China, April 2002
74. “Active Visualization”, Eurographics Workshop on Virtual Environments, Barcelona, Spain, May 2002
75. “Molecular Modeling and Visualization” Gordon Conference on Diffraction Methods, Connecticut, July 2002
76. “Molecular Modeling and Visualization” IUCR World Congress on Crystallography, Geneva, Switzerland, August 2002
77. [Keynote] “Volumetric Filtering Modeling and Visualization for Nano-Medicine”, Eurographics 2003, Granada, Spain
78. “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. “Quality Meshing of Large Biomolecular Complexes”, Japan Society of Industral and Applied Mathematics, Tokyo. September 2004
84. “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. [Keynote] "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, PMCID: PMC2678009
98. Invited Talk on "Fast Algorithms for Protein-Protein Energetic Interactions", Workshop on Macro-Molecules and Proteins, Lincei Academy, Rome, March 2007
99. [Keynote] "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. [Keynote] "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. [Plenary] "Geometric Flow for Quality Surface/Volumetric Modeling", 1st Workshop on Computational Engineering and Fluid Dynamics, Lisbon, Portugal, July 2008
108. [Plenary] "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. [Keynote] "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. [Keynote] "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. [Keynote] "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 Instititute, 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 82th birthday of Prof. Abhyankar, Pune University, December 2012

123. [Keynote] “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, Wiamea, 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. [Keynote] “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”, IIEEJ 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. [Keynote] “Quantitative Visualization in the Computational Biological Sciences”, IEEE Pacific Visualization 2012, Songdo, Korea, February 2012
138. Biomedicine in 4D Conference “Statistical Verification and Validation of Drug Targets using 3DEM”, Oregon Health and Science University, March 2012.
139. “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. “Variational Methods in Molecular Electron Tomography”, SIAM Conference on Imaging Science, Philadelphia, Pennsylvania, May 2012
142. [Keynote] “Quantitative Visualization in the Biological Sciences”, International Conference on Contemporary Computing, IC3, New Delhi, India, August 2012
143. “Enhancing Visualization of Multi-scale Biophysical Simulations”, Conference on Computational Physics, Kobe, Japan, October 2012
144. “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. “Multi-Protein Docking”, Modeling of Protein Interactions MPI 2012, University of Kansas, Lawrence, Kansas, November 2012
146. “Images to Function: Multi-scale Modeling of Electrophysiology in the Hippocampus”, Modeling and Simulations of Physiological Systems, Technico Lisboa, Lisbon, Portugal, December 2012
147. “Computational Science Challenges for the 3D Virtual Cell”, University of California, San Diego, California, December 2012
148. “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. "Modeling, Analysis and Validation of Molecular Interactions from Electron Microscopy", Advanced Imaging Methods Workshop, UC Berkeley, California, January 2013
150. [Keynote] "The Geometry and Analysis of Biological Machines", Advances in Computational Mechanics, Celebrating the 70th Birthday of Thomas J.R. Hughes, Febrauary 2013
151. "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. [Keynote] "Data Enabled Molecular Modeling, Uncertainty Quantification and Visualization," 2013 NSF CyberBridges Workshop, July 2013
153. [Keynote] "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. "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. "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. "Imaging and Modeling in Electron Microscopy—Recent Advances", Banff International Research Station, Workshop, May 2014
160. "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. [Keynote] Okinawa Institute of Science, Technology Workshop on Quasi-Symm. Assemblies (Jan 2015)
162. [Keynote] "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. "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. [Plenary] "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, "Scalable Geometric Optimization with Applications to Prediction of Assemblies", TU Berlin (Technische Universitat Berlin), June 21, 2016, Berlin, Germany
168. "Disk Density Tuning of a Maximal Random Packing", The International Geometry Summit 2016 (IGS), Solid and Physical Modeling (SPM), Technische Universitat Berlin, June 22, 2016, Berlin, Germany
169. "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
170. "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
171. "Modern Computer Science", Convocation 2016, Indian Institute of Technology Delhi, Nov 2-12, 2017, New Delhi, India
172. "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
173. "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

174. “Sampling and Optimization in Infrared Spectroscopy”, Multiscale and High-Dimensional Problems Conference, March 26-April 2, 2017, Oberwolfach, Germany
175. “Sampling and Optimization for High Dimensional Big Data”, Dagstuhl Seminar on Geometric Modelling, Interoperability and New Challenges, May 28-June 2, 2017, Schloss Dagstuhl , Saarbrucken, Germany
176. “Sampling and Optimization for High Dimensional Big Data”, INRIA Institut National De Recherche En Informatique Et En Automatique, June 2-9, 2017, Nice, France
177. “Optimized Polygonal Meshes for Quadratic Serendipity Finite Elements”, ADMOS 2017 Adaptive Meshing Methods and Applications Mini-symposium, June 25-29, 2017, Verbania, Italy
178. “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
179. “Mathematics of Hetereogeneous 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
180. [Distinguished Speaker], “Classification Problems with FTIR”, Berlin International Graduate School in Model and Simulation based Research (BIMoS), Technische Universitat Berlin, Germany.
181. “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
182. “The Promise of Infrared Spectroscopy” National Conference on Computational Vision, Pattern Recognition, Image Processing and Graphics, December 16-20, 2017, Delhi, India
183. “Learning Models with Data using Optimization” Models & Data, February 22-23, 2018, Columbia, South Carolina
184. “Promise of Infrared Imaging” University of Tokyo, February 27-March 3, 2018, Tokyo, Japan
185. “The Promise of Machine Learning for Infrared Spectroscopy”, TIME Workshop. University of Illinois at Urbana-Champaign, March 30, 2018, Urbana-Champaign, Illinois
186. “Sampling Conditions for Conforming Voronoi Meshing by the Vorocrust Algorithm” Symposium on Computational Geometry (SOCG 2018), June 2018, Budapest, Hungary
187. “Sparse G1 Spline Manifold and Salient Feature Map Approximation with Topological Accuracy” Curves and Surfaces, June 27-July 2, 2018, Arcachon, France
188. Texas Imaging Symposium, October 30, 2018, The University of Texas, Austin, Texas
189. [Keynote] “Making the Invisible Visible” ChinaGraph, November 9-11, 2018, Guangzhou, China
190. “Deep Learning for Infrared Spectroscopy” Colloquium, Tsinghua University, Beijing, China, Nov 13, 2018
191. “Deep Learning for Infrared Spectroscopy” Colloquium, Peking University, Beijing, China, Nov 14, 2018
192. “Mathematics of Infrared Spectroscopy”, Colloquium, Academia Sinica, Beijing, China, Nov 15, 2018
193. [Keynote] “Unsupervised Super Resolution Hyperspectral Imaging” International Conference on Machine Learning and Data Science (ICML & DS 2018), December 21-22, 2018, Hyderbad, India
194. Invited Speaker,Cryo-EM Workshop, August 8-9, 2018, New York, New York.
195. Invited Speaker, “Spatio-Spectral Tensor Super-resolution” New York University, NY, January 24, 2019
196. Invited Speaker, “Spatio-Spectral Tensor Super-resolution” Stony Brook University, NY, January 25, 2019
197. Invited Speaker “Spatio-Spectral Tensor Super-Resolution with Chemical Priors” SIAM Conference on Computational Science and Engineering, February 25–March 1, 2019, Spokane, Washington
198. “ Are Spline Kernels Useful”, University of Chicago, May 15-May 19, 2019
199. “Learning to Sample and Sampling to Learn”, Amazon, Seattle, June 8-16, 2019
200. “Computation, Mathematics, and Statistics for Visual Search Applications”, Univeristy of Peking- Beijing, China, July, 2019
201. “Computation, Mathematics, and Statisics for Visual Search Applications”, July 1-13, 2019, University of Peking-Beijing, China
202. ALBERT:A digital Pathology Electronic Assistant, August 2-4, 2019, UT Southwestern Medical center- Dallas and Univ of Oklahoma.
203. [Plenary] “Statistical Deep Learning for Automatic 2D and 3D Cytotyping of tumor tissue”. Cold Spring Harbor-Asia conference, Shanghai, China, September 4, 2019
204. “Learning to Sense, Model. And Predict”. Shanghai Jai Tong University- Shanghai, China, September 6, 2019
205. [Plenary] “Learning the Koopman Operator for Dynamic Simulations”, Workshop on Digital Twins, University of Luxembourg, September 9-13, 2019
206. “Deep Learning Koopman Operator for Dynamic Data”, Georgia Tech at Atlanta, Ga. Sept 17, 18, 2019
207. “Deep Learning for Static and Dynamic Data” Colloquium talk, NYU Data Sciences, Sept 27, 2019
208. “Deep Learning Koopman Modes for Dynamic Data” Colloquium talk, Princeton University, Sept 30, 2019

209. [Keynote] "Learning to Correct Form and Function with Reinforcement", The 2nd TBSI Workshop on Learning Theory (TBSI-WOLT'20) July 20-22, 2020
210. Invited Speaker "Deep Learning to Correct Form and Function with Reinforcement", New Jersey Institute of Tech, December 9, 2020
211. Invited Speaker "Learning Robust Delaunay/Voronoi (Primal-Dual) Meshes with Minimal Uncertainty", NUMGRID-2020 – Moscow, November 20, 2020
212. Invited Speaker, "Learned Stochastic Decision Making with Applications to Protein Folding", IEEE- CS- BITS APPCAIR seminar- June 11, 2021
213. [Keynote] - "Learning Rank-Ordered Intelligent Search Policies with Minimal Uncertainty" Emerging Techniques in Computational Intelligence, Co-Sponsored by the IEEE Computational Intelligence Society, Ecole Centrale School of Engineering, Mahindra University, Hyderabad, India, August 25-27, 2021
214. Babuska Oden Institute Workshop, October 11, 2021- Can Computers Self-Learn to Model, Verify, Validate and Predict?- Albuquerque, NM for Prof. Ivo Babuška 95th birthday
215. Invited Speaker , Workshop 3- Linz, Austria- November 1-5, 2022, "Inverse Problems on Small Scales" Special Semester on Topography Across the Scales
216. Invited Speaker, Applied Geometry for Data Sciences-, Chongqing University of Technology- Mathematical Science Research Center- July 25-29 2022
217. Keynote Speaker, Second International Conference on Emerging Techniques in Computational Intelligence, August 25-27, 2022