

Thomas J. Peters

Curriculum Vitae

August 9, 2017

<http://www.cse.uconn.edu/~tpeters>

Education

Ph.D., Mathematics (Topology), Wesleyan University, Middletown, Connecticut, 1982

M.S., Mathematics, University of Rhode Island, 1978;

B.A., Mathematics, New College, Sarasota, Florida, 1973

Experience

Professor of Computer Science and Engineering

Professor of Mathematics

University of Connecticut, Storrs, Connecticut

Visiting Professor of Mathematics, Freie Universität Berlin (Sabbatical), 2011

Visiting Professor of Computer Science, Kaiserslauten University (Sabbatical), 2011

Visiting Professor of Computer Science, Université de Montréal, (Sabbatical), 1996

At UConn, in progressively increasing rank, since 1989.

Interdisciplinary investigations of large data sets from neurodevelopment, molecular simulations, verifiable visualization, computer animation and engineering design. Fundamental contributions to computational topology, computer graphics and scientific visualization.

Neurodevelopmental Modeling: Emerging results to understand pediatric neurodevelopment associated with hydrocephalus, drawing interest from neurosurgeons at Yale. One article published, two conference talks given and an invited lecture presented in Yale New Haven Hospital, Grand Rounds, Department of Neurosurgery.

A grant application is under review at NIH, with the goal of creating 4D models of normal stem cell differentiation to understand how pathologic changes in ventricular morphology affect brain development. The planned computational steering of these simulations will permit clinicians to perform ‘in silico’ experiments to devise precision treatment strategies for pediatric hydrocephalus that optimize neurodevelopmental outcomes.

The intent is to identify critical features that change, develop the mathematics to interpolate those changes and then extrapolate them for future prognoses, with verification and refinement from subsequent patient data. Relations to genetic issues are being pursued concurrently on slices of sacrificed mouse brains in collaboration with the Neurobiology Department at UConn.

Understanding Petabytes of Simulation Data: Active industrial collaboration with IBM. Application of topological neighborhoods and isotopic equivalence to advise of impending changes to the embedding of the molecule, where these structural changes are of bio-molecular interest. Integration with computational steering. Direct funding from IBM and access to high performance computers. Primary IBM collaborator of Dr. K. E. Jordan, co-author on 10 joint papers, with more in preparation. Results are now being extending to computational steering and to understanding the chemical process of branching for micelle.

Digital Media: Co-founder (2010) of the UConn Digital Media Center to complement the academic Digital Media Department, also founded in 2010. Emphasis on integration of art, science and technology for scientific visualization, visual analytics and user experience.

Computer Special Effects Start Up: Co-founder of Kerner Graphics, Inc. Principal Investigator for a National Science Foundation SBIR Award “Topologically Encoded Animation (TEA)”. Technology transfer into hand gesture algorithms for prototype data gloves.

Geometric accuracy: Supportive NSF grants from 2000 - 2006, highlighted by the I-TANGO project. Primary collaborator of Dr. D. R. Ferguson of The Boeing Company. He was co-author on five joint papers and co-editor on a SIAM monograph. Graduate student intern at Boeing. Error analysis of 2003 CAGD paper received attention within Boeing’s geometric design community.

Instructional emphasis upon computer graphics, visualization, computational topology, splines, numerical analysis, software engineering, and computer architecture.

Senior Technical Staff, C. S. Draper Laboratory, Cambridge, MA (1988 - 1989)

Software architect integrating artificial intelligence with engineering design for technology transfer to major industrial and governmental sponsors.

Senior Technical Staff, ComputerVision Corporation, Bedford, MA (1984 - 1988)

Software architect for 6 million lines of source code for computer-aided design at this Fortune 500 company. This mature code remains vital, today, in commercial products. Infused perspective on computational topology to increase mathematical rigor throughout the system. Particular focus on numerical tolerances within geometric and graphics algorithms. Designer of a NURBS-based geometry subsystem. Leader of collaborative product development with the University of Utah for high performance graphics for splines. Initial work was as a software engineering in computer graphics.

Assistant Professor, University of Hartford, West Hartford, CT (1982 - 1983)

Research in mathematics (topology) and mathematical instruction.

Archival Publications

1. *Visual experiments of geometric combinatorics for neural stem cells and their derivatives*, T. J. Peters, J. C. Conover, D. McManus, K. Pratt, Proceedings of the Biology and Computational Biology Conference, Honolulu, HI, March 20 - 22, 2017.
2. *Computational topology: isotopic convergence to a stick knot*, J. Li, T. J. Peters, K. E. Jordan, P. Zaffetti, **Topology and Its Applications**, 206 (15), 276–283, 2016.
3. *Topological subtleties for molecular movies*, J. Li, T. J. Peters, K. Marinelli, E. Kovalev, K. E. Jordan, **Topology and Its Applications**, 118 (15), 91 – 96, 2015.
4. *Computational topology for approximations of knots*, J. Li, T. J. Peters, K. E. Jordan, **Applied General Topology**, 15 (2), 203-220, 2014.
5. *Isotopic equivalence from Bézier curve subdivision for application to high performance computing*, K. E. Jordan, J. Li, T. J. Peters and J. A. Roulier, **CAGD**, 31, 642-655, 2014.
6. *Topological integrity for dynamic spline models during visualization of big data*, H. P. Cassidy, T. J. Peters, H. Ilies, K. E. Jordan, **Topological Methods in Data Analysis and Visualization III**, Editors: Bremer, P.-T., Hotz, I., Pascucci, V., Peikert, R., Springer, NY, 167 - 186, 2014 .
7. *Isotopic convergence theorem*, J. Li, T. J. Peters, **Journal of Knot Theory and Its Ramifications**, March 2013, DOI: 10.1142/S0218216513500120
8. *Computational topology counterexamples with 3D visualization of Bézier curves*, J. Li, T.J. Peters, D. Marsh, K.E. Jordan, **Applied General Topology**, 13(2):115-134, 2012.
9. *Dynamic computational topology for piecewise linear curves*, H. Cassidy, T. J. Peters, K. E. Jordan, **Proceedings of Canadian Conference on Computational Geometry**, Charlottetown, P.E.I., Aug. 8 - 10, 2012, 279 - 284, permanently archived at <http://www.cccg.ca/>
10. *Crystallizing Topology in Molecular Visualizations*, T. Hunter, K. Marinelli, D. Marsh, T. J. Peters, **Bridges: Mathematics, Music, Art, Architecture, Culture**; July 25-29, 2012, Towson University, MD, 449 - 452, permanently archived at <http://bridgesmathart.org/2012/cdrom/>.
11. *Topology verification for isosurface extraction*, T. Etienne, L. G. Nonato, C. Scheidegger, J. Tierny, T. J. Peters, V. Pascucci, R. M. Kirby, and C. T. Silva, **IEEE Transactions of Visualization and Computer Graphics**, 18 (6), 952–965, June 2012.
12. *Unknots with highly knotted control polygons*, J. Bisceglia, T. J. Peters, J. A. Roulier C. H. Séquin, **Computer Aided Geometric Design** 28 (3), 212-214, 2011.

13. *Geometric Topology and Visualizing 1-Manifolds*, K. E. Jordan, L. E. Miller and T. J. Peters and A. C. Russell, in **Topological Methods in Data Analysis and Visualization**, (Editors: V. Pascucci, X. Tricoche, H. Hagen and J. Tierny), Springer, NY, 1 – 13, 2011.
14. *Through a new looking glass*: mathematically precise visualization*, K. E. Jordan, R. M. Kirby, C. Silva, and T. J. Peters, **SIAM News**, June 2010, **43** (5), 1 – 4.
15. **Mathematics for Industry: Challenges and Frontiers**, monograph, Edited by D. A. Field and T. J. Peters, Society for Industrial and Applied Mathematics, Philadelphia, April 22, 2010.
16. *The art of “mathematics for industry”*, D. A. Field and T. J. Peters, **Mathematics for Industry**, SIAM, Philadelphia, 2010.
17. *Modeling time and topology for animation and visualization with examples on parametric geometry*, Jordan, K. E., Miller, L. E., Moore, E. L. F., Peters, T. J. and Russell, A. C., **Theoretical Computer Science**, vol. 405, (2008), p. 41 – 49.
18. *Topological neighborhoods for spline curves: practice & theory*, Miller, L. E., Moore, E. L. F., Peters, T. J. and Russell, A., **Lecture Notes in Computer Science**, P. Hertling et al. (Eds.): Real Number Algorithms, 5045, pp. 149 - 161, 2008
19. *Preserving computational topology by subdivision of quadratic and cubic Bézier curves*, E. L. F. Moore, T. J. Peters, J. A. Roulier, **Computing**, Springer Wien, Special issue on Geometric Modeling (Dagstuhl 2005) Volume 79, Numbers 2-4 / April, 2007, 317 – 323, Special editors: S. Hahmann, G. Brunnett, G. Farin and R. Goldman, invited article.
20. *Proceedings of Computational Topology Workshop*, Peters, T. J., invited article, special issue of **Applied General Topology**, vol. 8, (2007), p. v – vi.
21. *Computational topology for isotopic surface reconstruction*, Abe, K., Bisceglia, J., Ferguson, D. R., Peters, T. J., Russell, A. C., Sakkalis, T., **Theoretical Computer Science**, Special Issue – Spatial Representation: Discrete vs. Continuous Computational Models, Edited by R. Kopperman, P. Panangaden, M.B. Smyth, D. Spreen and J. Webster, 365 (3), 184 – 198, 2006.
22. *Computational Topology*, Blackmore, D. L. and Peters, T. J., invited article, in **Open Problems in Topology II**, (ed.) E. Pearl, Elsevier, Elsevier, 2006, pp. 491 - 546.
23. *Floating Point Geometric Algorithms for Topologically Correct Scientific Visualization*, Peters, T. J. and Moore, E. L. F., in *Reliable Implementation of Real Number Algorithms: Theory and Practice*, (eds.) P. Hertling, C. M. Hoffmann, W. Luther and N. Revol, **Dagstuhl Seminar Proceedings**, Dagstuhl, Germany, 2006 <http://drops.dagstuhl.de/opus/volltexte/2006/717>.
24. *Reconstructing surfaces using envelopes; bridging the gap between theory and practice*, Bisceglia, J., Peters, T. J. and Abe, K., **Posters of ACM Siggraph**, 2006.

25. *Computational topology for reconstruction of surfaces with boundary: integrating experiments and theory*, K. Abe, J. Bisceglia, T. J. Peters, A. C. Russell, D. R. Ferguson, T. Sakkalis, **Proceedings of the IEEE International Conference on Shape Modeling and Applications**, June 15 - 17, 2005, Cambridge, MA, IEEE Computer Society, Los Alimitos, CA, 288 - 297.
26. **Mathematics for Industry: Challenges and Frontiers**, monograph, Edited by D. R. Ferguson and T. J. Peters, Society for Industrial and Applied Mathematics, Philadelphia, 2005.
27. *Computational topology for geometric design and molecular design*, Moore, E. L. F. and Peters, T. J., invited paper, **Mathematics for Industry**, SIAM, Philadelphia, 2005, 125 - 139.
28. *Integrating topology and geometry for macro-molecular simulations*, Moore, E. L. F. and Peters, T. J., Ferguson, D. R., and Stewart, N. F., in Spatial Representation: Discrete vs. Continuous Computational Models, (eds.) R. D. Kopperman, M. B. Smyth, D. Spreen and J. Webster, **Dagstuhl Seminar Proceedings, Dagstuhl, Germany**, 2005, <http://drops.dagstuhl.de/opus/volltexte/2005/124>.
29. *Application of ambient isotopy to surface approximation and interval solids*, Sakkalis, T., Peters, T. J., Bisceglia, J., invited article, **Computer Aided Design**, Special issue - Solid Modeling Theory and Applications, 36 (11), 1089-1100, 2004.
30. *Computational topology for regular closed sets (within the I-TANGO project)*, Peters, T. J., Bisceglia, J., Ferguson, D. R., Hoffmann, C. M., Maekawa, T., Patrikalakis, N. M., Sakkalis, T. and Stewart, N. F., invited article, **Topology Atlas**, vol. 9, no. 1 (2004) 12 pp. <http://at.yorku.ca/t/a/i/c/50.htm>.
31. *Specifying useful error bounds for geometry tools: an intersector exemplar*, Mow, C., Peters, T. J., Stewart, N. F., **Computer Aided Geometric Design**, 20 (5), 2003, 247 - 251.
32. *Ambient isotopic approximation for surface reconstruction and interval solids*, Sakkalis, T., Peters, T. J., **Proceedings of the Eighth ACM Symposium on Solid Modeling and Applications**, Seattle, Washington, June 16 - 20, 2003, 176 - 184.
33. *Computational topology: ambient isotopic approximation of 2-manifolds*, Amenta, N., Peters, T. J., and Russell, A., **Theoretical Computer Science**, 305, 3-15, 2003.
34. *Computational topology for CFD: theorems, criteria and issues*, Peters, T. J. and Stewart, N. F., **Computational Fluid and Solid Mechanics**, Vol. 2 (ed. K. J. Bathe), MA, Elsevier, 2001, 951 - 953.
35. *Equivalence of topological form for curvilinear geometric objects*, L.-E. Andersson, T. J. Peters, N. F. Stewart, **International Journal of Computational Geometry and Applications**, (10), No. 6, 2000, 609 - 622.
36. *An IDL to Ada95 mapping to support propagation modeling*, D. Needham, S. Demurjian, T. Peters, **Ada Letters**, XX (2) March 2000, 58 - 66.

37. *Towards a distributed object-oriented propagation model using Ada95*, D. Needham, S. Demurjian, K. El Guemhioui, T. Peters, **SIGAda99**, 203 – 210.
38. *Self-intersection of composite curves and surfaces*, Andersson, L.-E., Peters, T. J. and Stewart, N. F., **Computer Aided Geometric Design**, (15), No. 5, 1998, 507 - 527.
39. *Implementing a culling and self-intersection algorithm for stereolithography files in Ada 95*, Reisner, J., Lainwala, Z., Peters, T. J., and Demurjian, S. A., **Proceeding for the ACM SIGAda International Conference (SIGAda 98)**, November 8-12, 1998, Washington DC, 104 – 113.
40. *Is robust geometry possible?*, Duff, T., Fortune, S., Hoffmann, C. M., Peters, T. J., Weiler, K., **ACM SIGGRAPH, July 22, 1998, Orlando, FL, Conference Abstracts and Applications**, 217 – 219.
41. *Object modeling to localize knowledge for feature interrelationships*, Peters, T. J., Demurjian, S. A., McCartney, R., and Needham, D. M., **Knowledge Intensive CAD**, Volume 2, (Ed. Mäntylä, M., Finger, S., and Tomiyama, T.), Chapman and Hall, London, 1998, 198 – 207.
42. *Object-oriented design abstractions and code generation front ends to CAD systems*, Needham, D. M., Peters, T. J. and Demurjian, S. A., **Product Modelling for Computer Integrated Design and Manufacture**, Chapman-Hall, 1997, 43 - 53.
43. *Algorithmic tolerances and semantics in data exchange*, Peters, T. J., Stewart, N. F., Ferguson, D. R., and Fussell, P. S., **Proceedings of the ACM Symposium on Computational Geometry**, Nice, France, June 4 - 6, 1997, 403 – 405.
44. *An Ada95 basis for propagation modeling*, Needham, D., Demurjian, S., and Peters, T. J., **Proceedings of TriAda Conference**, St. Louis, MO, November, 1997, 263 – 272.
45. *The role of topology in engineering design research*, Rosen, D. W. and Peters, T. J., **Research in Engineering Design**, (8), No. 2, 1996, 81 – 98.
46. *ADAM: a language-independent, object-oriented, design environment for modeling inheritance and relationship variants in Ada95, C++, and Eiffel*, Needham, D., Demurjian, S., El Guemhioui, K., Peters, T. J., Zamani, P., McMahon, M., and Ellis, H., **Proceedings of 1996 TriAda Conference**, Philadelphia, PA, Dec. 1996, 99 – 113.
47. *Propagating topological tolerances for rapid prototyping*, Peters, T. J., Demurjian, S. A., Needham, D. M., Peters, R. J., and Dorney, S. M., **1996 ASME IMECE Conference Proceedings**, American Society of Mechanical Engineers, MED-Vol. 4, Manufacturing Science and Engineering, Atlanta, GA, Nov. 17 - 21, 1996, 487 – 498.

48. *Relations between features-prototyping object-oriented language extensions on an industrial example*, Brett, B. D., Peters, T. J., Demurjian, S. A., Needham, D. M., **ASME Computers in Engineering Conference Proceedings**, Irvine, CA, Aug. 19 - 22, 1996, CD-ROM only.
49. *Modeling topological interdependencies in Ada95*, Needham, D. M., Peters, T. J., and Demurjian, S. A., **Proceedings of the Tenth Annual Ada Software Engineering Education & Training Symposium**, Prescott, AZ, June 25 - 28, 1996, 101 - 114.
50. *Polyhedral perturbations that preserve topological form*, L-E. Andersson, S. M. Dorney, T. J. Peters, N. F. Stewart, **Computer Aided Geometric Design**, 12, 1995, 785 - 799.
51. *Integrating Ada 95 within a language independent approach to undergraduate software engineering education*, D. M. Needham, S. A. Demurjian, T. J. Peters, & K. El Guemhioui, **Proceedings 9th Annual Ada Software Engineering Education and Training Symposium**, Morgantown, WV, June 6 - 9, 1995, 42 - 51.
52. *The diversity of topological applications within computer aided geometric design*, Peters, T. J., Rosen, D. W., and Dorney, S. M., **Annals of the New York Academy of Sciences**, (728), 1994, 198 - 209.
53. *A topological model of limitations in design for manufacturing*, T. J. Peters, D. W. Rosen, V. Shapiro, **Research in Engineering Design**, (6) No. 4, 1994, 223 - 233.
54. *Profiling in an object-oriented design environment that supports Ada9X and Ada83 code generation*, El Guemhioui, K., Demurjian, S., Peters, T. J., and Ellis, H., **Proceedings of 1994 TriAda Conference**, Baltimore, MD, November 1994, 180 - 190.
55. *Feature-based modeling by object-oriented design with propagation*, Peters, T. J., Demurjian, S. A., Ting, T.C., and Glovin, S., **Proceedings International Conference on Data & Knowledge Systems for Manufacturing & Engineering**, Hong Kong, May 1994, 101 - 110.
56. Invited Editorial *Advances in representation and reasoning for mechanical CAD*, Rosen, D. W. and Peters, T. J., **Research in Engineering Design**, Vol. 5, Nos. 3 & 4, 1993, 123 - 124.
57. *Mechanical design heuristics to reduce the combinatorial complexity for feature recognition*, Peters, T. J., **Research in Engineering Design**, 4:(4), 1993, 195 - 201.
58. *Integrating bounding boxes, lines of support & shadowing for intersection detection in the plane*, Peters, T. J. & V. Toscano, **IFIP Transactions, Geometric Modeling for Product Realization**, eds., P.R. Wilson, M.J. Wozny, & M.J. Pratt, 1993, 29 - 44.

59. *Object-oriented design and automatic Ada code generation in the education of software engineers*, El Guemhioui, K., Demurjian, S., and Peters, T. J., **Proceedings of 1993 TriAda Conference**, Seattle, WA, September 1993, 88 – 99.
60. *Topological properties that model feature-based representation conversions within concurrent engineering*, Rosen, D. W., Peters, T. J., **Research in Engineering Design**, 1992, 4:147 – 158.
61. *The (non) importance of a programming language in a software engineering course*, Demurjian, S. A., Peters, T. J., Beshers, G. McA., Ellis, H. J.C., and Nichols, G., **Computer Science Education Journal**, (3), No. 1, 1992, 35 – 52.
62. *Encoding mechanical design features for recognition via neural nets*, **Research in Engineering Design**, (4), No. 1, 1992, 67 – 74.
63. *Topological fidelity in surface reconstruction*, Peters, T. J., Greenshields, I., Dorney, S. M., **Curves and Surfaces in Computer Vision and Graphics III, OE/Technology '92, SPIE**, Boston, MA, November 15-20, 1992, 221-225.
64. *Combinatorial analysis for feature recognition*, **Proceedings of the Fourth International Conference on Design Theory and Methodology**, American Society of Mechanical Engineers, DE-Vol. 42, September 14, 1992, 91 – 97.
65. *Intelligent decision support for assembly system design*, Hernandez, J. A., Peters, T. J., et al, **Innovative Applications of Artificial Intelligence**, eds., R. Smith and C. Scott, AAAI Press, July 14, 1991, 135 – 156.
66. *Parallel strategies in the reconstruction of surfaces from contour data*, Greenshields, I., Peters, T. J., and Chun, J., **Proceedings of the Fourth ISMM/IASTED International Conference on Parallel and Distributed Computing and Systems**, Washington, D.C., October 8-11, 1991, 355-357.
67. *An integrated system for concurrent design engineering*, Hernandez, J. A., Luby, S. C., Hutchins, P. M., Leung, H. W., Gustavson, R. E., De Fazio, T. L., Whitney, D. E., Nevins, J. L., Edsall, A. C., Metzinger, R. W., Tung, K. K., Peters, T. J., **Proceedings of the Seventh Annual IEEE Conference on Artificial Intelligence Applications**, Miami Beach, FL, February 1991, 205 – 211.
68. *A software architecture for graphical recognition of arbitrary mechanical design features*, Bardasz, T. & Peters, T. J., **Proceedings of ASME, International Computers in Engineering Conference**, Boston, MA, August 1990.
69. *Products and remote points: examples and counterexamples*, Peters, T. J. and Dow A., **Proceedings of the American Mathematical Society**, (104), 1988, 1296 – 1304.
70. *Locally finite families, completely separated sets and remote points*, Peters, T. J. & Henriksen, M., **Proceedings of the American Mathematical Society**, (103), 1988, 988 – 995.

71. *Integrating expert systems with a turnkey CAD/CAM system*, Peters, T. J., Morris, P. and Glovin, S., **Proceedings of the Conference on Computers in Engineering, American Society of Mechanical Engineers**, August 1988, 287 – 292.
72. *Game strategies yield remote points*, Dow, A. and Peters, T. J., **Topology and Its Applications**, (27), 1987, 245 – 256.
73. *Features as a basis for intelligent CAD/CAM*, Peters, T. J., and Glovin, S., **Proceedings for the Conference on Simulation and Artificial Intelligence in Manufacturing**, Society of Manufacturing Engineers, October, 1987, 2-1 to 2-5.
74. *For any X , the product $X \times Y$ has remote points for some Y* , **Proceedings of the American Mathematical Society**, (95), 1985, 641 – 648.
75. *Dense homeomorphic subspaces of X^* and of $(EX)^*$* , **Topology Proceedings**, (8), 1983, 285 – 301.
76. *G -spaces: products, absolutes and remote points*, **Topology Proceedings**, (7), 1982, 119 – 146.

Research Funding

1. **IBM Open Collaborative Research, Data Centric Visualization and Steering, 2017 - 2019** *Approved for \$230,000 in direct costs, awaiting awarding of funds.*
2. **IBM Faculty Award**, Scientifically Precise Remote Dynamic Visualization, 2013 - 2016, **\$17,000**.
3. **MRI: Development of a Gesture Based Virtual Reality System for Research in Virtual Worlds**, National Science Foundation, PI H. Ilies, T. J. Peters as Senior Scientist, July 15, 2009 - June 30, 2014, inclusive of GOALI funding of \$150,000 obtained directly by T. J. Peters, **\$932,000**.
4. **EAGER: Visualization of Protein Folding for Nano-Machine Design**, National Science Foundation, T. J. Peters, August 15, 2010 - July 31, 2012, (with REU supplement) **\$55,896**.
5. **Topological Supercomputing**, Nvidia, PI T. J. Peters, Feb. 15, 2009 - Feb. 14, 2010, **\$6,000**.
6. **Topologically Encoded Animation (TEA) for Visual Effects in the Digital Arts**, Kerner Graphics, National Science Foundation, PI T. J. Peters, May 1, 2008 - Dec. 31, 2008, **\$150,000**.
7. **IBM Doctoral Fellowships and Summer Internships**, (two awards over two academic years), 2006 - 2008, **\$201,000**.
8. **IBM Faculty Award**, Computational Topology for Scientific Visualization in High Performance Computing, 2005 - 2006, **\$40,000**.

9. **Computational Topology for Surface Approximation**, National Science Foundation, PI T. J. Peters, co-PI K. Abe, Department of Mathematics, University of Connecticut; co-PI A. C. Russell, Department of Computer Science and Engineering, University of Connecticut; September 15, 2004 - September 14, 2007, **\$255,000**.
10. **Computational Topology for Surface Approximation – REU Supplement**, National Science Foundation, PI T. J. Peters, co-PI K. Abe, Department of Mathematics, University of Connecticut; co-PI A. C. Russell, Department of Computer Science and Engineering, University of Connecticut; September 15, 2004 - September 14, 2007, **\$12,000**.
11. **Computational Topology—Six Years and Growing**; National Science Foundation, PI T. J. Peters; with co-PI R. D. Kopperman and J. Krone, July 2005, **\$12,000**.
12. **Travel Award, Invited Speaker** European Union Project on Effective Computational Geometry, Max-Planck Institute for Informatics, Saarbrucken, Germany, September, 2003, **\$3,000**.
13. **Computational Topology for Surface Reconstruction**, Division of Computer and Information Science and Engineering, -Communications Research, National Science Foundation, October 1, 2002 - September 30, 2005, PI T. J. Peters; co-PI K. Abe, Department of Mathematics, University of Connecticut; co-PI A. C. Russell, Department of Computer Science and Engineering, University of Connecticut; includes RIU supplement of \$10,000. **\$110,000**.
14. **I-TANGO: Intersections — Topology, Accuracy and Numerics for Geometric Objects (in Computer-Aided Design)**, Division of Mathematical Sciences, National Science Foundation, May 1, 2002 - April 30, 2005, PI T. J. Peters; co-PI C. M. Hoffmann, co-PI N. M. Patrikalakis. **\$767,000**.
15. **Integrating Topology and Numerics at CAD Interfaces**, T. J. Peters, Division of Mathematical Sciences, National Science Foundation, Jan. 15, 2000 - Dec. 31, 2001, Small Grant for Exploratory Research funded by four separate programs: (1) Computational Mathematics, (2) Geometric Analysis, (3) Numeric, Symbolic and Geometric Computation, and (4) Design and Integration Engineering, **\$30,000**.
16. **SIAM Conference Support, Mathematics in Industry, Toronto, Ontario, June, 2003**, PI D. Field, with co-PIs D. R. Ferguson, E. Moylan, J. Nachman, M. LaChance, T. J. Peters, P. Tuchinsky, P. Tannenbaum, awarded December 2001, for partial conference expenses, **not to exceed \$10,000**.
17. **Graduate Student Internship**, The Boeing Company, Summer 2001, **\$10,000**.
18. **Topology for Design Models & Engineering Simulations**, T. J. Peters and A. C. Russell, General Electric Corporation Engineering Research Foundation, Jan. 30, 2000 - Dec. 30, 2000, **\$18,000**.
19. **Instructional Animations for Active Mathematical Learning**, Project to Increase Mastery of Mathematics and Science and the UConn Institute of Teaching and Learning, 1998 - 1999, **\$3,000**.

20. **Express Body Checker** , United Technologies Corporation, PDES, Inc, and STEP Tools, Inc. 1997 - 1998, **\$71,158**.
21. **Simultaneous Modeling of Features and Design Interdependencies to Support Computer-Integrated Engineering Via Object-Oriented Software**, Division of Manufacturing and Industrial Innovation, National Science Foundation, Grant Number MII-9308346, and Concentra Corporation, 1993 - 1997, **\$209,963**.
22. **Ada9X and Object-Oriented Design in an Enhanced Software Engineering Sequence**, co-PIs: S. A. Demurjian and T. J. Peters, DARPA, June 1994 - Sep. 1995, Grant Number F29601-94-K-0043, **\$49,000**.
23. **Adding Breadth and Laboratories to the Introductory Courses**, PI: K. Barker, National Science Foundation, Grant Number CDA-9121314, July 1991 - Feb. 1995, T. J. Peters led the development of a laboratory based course in algorithms, **\$140,494**.
24. **Integrating Ada and Object-Oriented Design within a Software Engineering Course**, co-PIs: S. A. Demurjian and T. J. Peters, DARPA, Grant Number F29601-93-K-0126, May 1993 - Feb., 1995, **\$57,309**.
25. **Mathematical Foundations for Tolerance and Equivalent Topological Form in CAD/CAE/CAM**, June 1993 - Oct. 1993, NASA Grant Number NGT 40037, **\$10,000**.
26. Travel funding for research visit to University of Montreal, under Neil F. Stewart as PI, NSERC Grant Number OGP0008174, August 1993, **\$1,100**.
27. **Mechanical Design and Manufacturing Tolerance Theory Development via a Computer Graphics Visualization System**, UConn Research Foundation, Faculty Large Grant, Duration January 1, 1993 through January 15, 1994, University account number 440851, **\$7,981**.
28. **Air Quality Model Code Verification Analyses**, co-PIs: R. Londregan and T. J. Peters, Lake Michigan Air Director Consortium, jointly to UConn and ENSR Consulting and Engineering Corporation, Jan. 1992 - July 1992, **\$200,000**.
29. **Feature Recognition within Mechanical Design via Neural Network Pattern Recognition**, UConn Research Foundation, Faculty Large Grant, Duration January 1, 1991 through December 31, 1991, Grant Number TYR 913501, **\$11,284**.

RESEARCH PRESENTATIONS

Invited Presentations

International Conferences

1. *Knot Theory and Computational Steering for Molecular Simulations* SIAM Conference on Industrial and Applied Geometry, Pittsburgh, PA, June 10 - 13, 2017.
2. *Moving Molecular Data for Mobile Visualization*, SIAM Annual Meeting, July 11 - 15, 2016, Boston, MA,
3. *Synchronous Visual Analytics on Petabytes of Molecular Simulations-Topology, Geometry and Numerics*, SIAM Conference on Geometric and Physical Modeling, Denver, CO, October 12 - 14, 2015.
4. *Knots and Computer Graphics*, Spring Topology Conference, Central Connecticut State College, March 23, 2013
5. *Isotopic Molecular Visualizations*, Topological Data Analysis and Machine Learning Theory Workshop, Banff International Research Center, October 15, 2012. (Video available at <https://www.birs.ca/events/2012/5-day-workshops/12w5081/videos/watch/201210151736-Peters.html>)
6. *Knot Theorems and Counterexamples for Splines*, 2012 SIAM Annual Meeting, Minneapolis, MN, July 9 - 13, 2012.
7. *The Transition from Surgical to Synthetic*, SIAM Conference, Mathematics for Industry, October 9 - 10, 2009.
8. *Topology of Geometry in Motion*, Dagstuhl Seminar “Geometric Modeling”, May 26 - May 30, 2008.
9. *Simulation Topology – An Overview*, 2007 SIAM Conference on Mathematics for Industry, Oct. 10, 2007, Philadelphia, PA
10. *Floating Point Geometric Algorithms for Topologically Correct Scientific Visualization*, Dagstuhl Seminar “Reliable Implementation of Real Number Algorithms: Theory and Practice”, January 8 - 13, 2006.
11. *Computational Topology and CAGD Approximation*, SIAM Conference on Geometric Design and Computing, Phoenix, AZ, October 30 - November 3, 2005, **Plenary Address**.
12. *Integration of Computational Topology and Curve Subdivision*, Dagstuhl Seminar “Geometric Modeling”, May 29 - June 3, 2005.
13. *Computational Topology and Spline Surfaces*, Dagstuhl Seminar “Spatial Representation: Discrete vs. Continuous Models”, August 22 - 27, 2004.

14. *Industrial Mathematics within the Larger Mathematical Community*, panel discussion with D. R. Ferguson and K. Jordan, SIAM Conference on Mathematics in Industry 2003, Toronto, Ontario, Canada, October 13 - 15, 2003.
15. *Intersecting Surfaces and Approximated Topology*, European Union Workshop on Effective Computational Geometry, Max-Planck Institute for Informatics, Saarbrucken, Germany, September 24, 2003.
16. *Symbolic and Approximated Topology*, 8th International Conference on Applications of Computer Algebra, Volos, Greece, June 25-28, 2002.
17. *Approximated Intersections Versus Exact Topology*, Dagstuhl Seminar "Mathematical Structures for Computable Topology and Geometry", May 26 - 31, 2002.
18. *Digital Topology to Simulation Topology?*, Workshop on Digital Topology, City College and the Graduate Center, City University of New York, March 22-23, 2002.
19. *Numerical accuracy and consistent topology in geometric computations*, The Summer Conference Series in Topology and Applications, Special Session 'Asymmetry/Computer Science', July 18 - 21, 2001, City College of New York, New York, NY.
20. *Geometric and topological modeling*, Workshop on Mathematical Challenges in Product Development and Manufacture, Fields Institute, Toronto, Ontario, Canada, June 25-26, 2001.
21. *Topological foundations for geometric modeling*, Peters, T. J. and Russell, A. C., Dagstuhl Seminar on Topology in Computer Science, June 5 - 9, 2000, Dagstuhl, Germany.
22. *Consistent Topology and Geometry for CAGD*, Sixth SIAM Conference on Geometric Design, Mini-Symposium, Albuquerque, Nov. 2, 1999.
23. *Well-Defined Topology for Robust Geometric Modeling & Simulation*, (with D. R. Ferguson and N. F. Stewart), Conference on Mathematical Foundations of CAD, Mathematical Sciences Research Institute, Berkeley, June 4-5, 1999.
24. *Is Robust Geometry Possible?*, panel presentation with T. Duff, S. Fortune, C. M. Hoffmann, T. J. Peters, K. J. Weiler, Association of Computing Machinery (ACM), SIGGRAPH '98, July 19 - 24, 1998, Orlando, FL
25. *Object-oriented design abstractions and code generation front ends to CAD systems*, IFIP TC5/WG5.2 International Workshop on Geometric Modeling in Computer Aided Design, Airlie, VA, May 19 - 23, 1996.
26. *Topology, Semantics and Features for SIF*, NIST SIF Workshop, NIST, Gaithersburg, MD, Nov. 25, 1996.
27. *Topology and Semantics Relative to Geometric Accuracy*, SIAM Geometric Design Conference '97, Geometric Accuracy Mini-Symposium, Nashville, TN, Nov. 3 - 6, 1997.

28. *Fast Lines of Support Can Be Sufficient*, Fourth IFIP WG 5.2 Workshop on Geometric Modeling in Computer-Aided Design, Rensselaerville, NY, September 27 - October 1, 1992.
29. *Point-set Topology as a Catalyst for Computational Geometry*, Eighth Summer Conference on General Topology and Applications, Queens College, NY, NY, June 18 -20, 1992.
30. *Pattern Matching as a Basis of Programmatic Feature Recognition*
Special Session on Geometry Related to Computer Vision, American Mathematical Society Meeting No. 851, Hoboken, NJ, October 20, 1989.

National Conferences

31. *TEA: Topologically Encoded Animation, Present and Future*, Kerner Seminar, May 16, 2008.
32. *I-TANGO for CAGD (Intersections – Topology, Accuracy & Numerics for Geometric Objects), III*, Peters, T. J., Stewart, N. F., Hoffmann, C. M., Patrikalakis, N. M., Maekawa, T., Sakkalis, T., Ferguson, D. R., DARPA and National Science Foundation, Computational and Algorithmic Representations of Geometric Objects (CARGO) 3rd Annual Meeting and Workshop, May 17-19, 2004, Madison, WI USA.
33. *I-TANGO for CAGD (Intersections – Topology, Accuracy & Numerics for Geometric Objects), II*, Peters, T. J., Stewart, N. F., Hoffmann, C. M., Patrikalakis, N. M., Maekawa, T., Sakkalis, T., Ferguson, D. R., DARPA and National Science Foundation, Computational and Algorithmic Representations of Geometric Objects (CARGO) 2nd Annual Meeting and Workshop, May 12-14, 2003, San Rosa, CA USA.
34. *I-TANGO for CAGD (Intersections – Topology, Accuracy & Numerics for Geometric Objects)*, Peters, T. J., Stewart, N. F., Hoffmann, C. M., Patrikalakis, N. M., Maekawa, T., Sakkalis, T., Ferguson, D. R., DARPA and National Science Foundation, Computational and Algorithmic Representations of Geometric Objects (CARGO) Kickoff Meeting and Workshop, May 20-22, 2002, Newport, RI USA.
35. *Features and Anti-Features*, Society of Industrial and Applied Mathematicians, Workshop on Mathematical Foundations for Features in Computer-Aided Design, Engineering and Manufacturing, October 22-23, 1998, Somerset Inn, Troy, MI.
36. *Modifying Designs While Maintaining Integrity via Object-Oriented Propagation*, Peters, T. J., Demurjian, S. A., Brett, B. D., and Needham, D. M., National Science Foundation, Division of Design and Manufacturing, Grantees' Meeting, University of New Mexico and Sandia National Laboratories, Albuquerque, NM, January 2 - 5, 1996.
37. *Integration of Features and Design Interdependencies within CAD/CAM*, National Science Foundation, Division of Design and Manufacturing, Grantees' Meeting, University of California, San Diego, La Jolla, CA, January 4 - 6, 1995.

38. *Propagation of Design Changes*, National Science Foundation, Division of Design and Manufacturing, Grantees' Meeting, Massachusetts Institute of Technology, Cambridge, MA, January 5 - 7, 1994.

Regional Conferences

39. *Software Architecture Views and Slices from Industry*, Software Architectures Day, Wesleyan University, Middletown, CT, May 2, 1998.
40. *Semantics of Propagation in Software Engineering* Semantics Mini-Conference, Roger Williams University, Bristol, RI, April 18, 1998.
41. *Expanding the Semantic Capabilities of Object-Oriented Paradigms*, 2nd Miniconference Topological Methods in Programming Language Semantics, The University of Connecticut, Storrs April 20, 1996
42. *Tolerance Modeling*, NASA Connecticut Space Consortium Grantees Presentation, Hartford, CT, November 16, 1993.

Colloquia at External Research Institutions

43. *Modeling Neurodevelopment for Infantile Hydrocephalus*, Yale, Neurosurgery Grand Rounds, New Haven, CT, May 5, 2017. (Video at https://medicine.yale.edu/neurosurgery/education/grand_rounds/grandrounds.aspx) [Currently on 2nd page, as ordered by date, listed under Thomas Peters, PhD.]
44. *Topological Analysis of Voluminous Bio-molecular Data*, Jackson Laboratory, Bar Harbor, ME, April 18, 2012.
45. *Topological Bio-molecular Steering*, Department of Computer Science, NYU-Poly, March 21, 2012.
46. *Applying Knot Theory to Visualization and Animation*, Department of Computer Science, Technische Universität Kaiserslautern, February 15, 2012.
47. *Topological Bio-molecular Steering*, Department of Computer Science, Technische Universität Kaiserslautern, February 13, 2012.
48. *Topological Analysis of Voluminous Bio-molecular Data*, Department of Mathematics, Freie Universität, Berlin, January 24, 2012.
49. *TEA, Knots & Molecules in Animation, Simulation & Visualization*, The Scientific Computing and Imaging Institute, University of Utah, February 25, 2009.
50. *TEA: Topologically Encoded Animation, Present and Future*, Electrical Engineering and Computer Science Department, University of California, Berkeley, November 6, 2008.
51. *Industrial Strength Computational Topology*, Department of Mathematics, Stanford University, November 5, 2008.

52. *Time and Topology for Scientific Visualization*, Department of Computer Science, Tufts University, September 19, 2007.
53. *Computational Topology for Reconstruction of Manifolds With Boundary (with Potential Application to Prosthetic Design)*, City University Topology Seminar, New York, NY, November 4, 2004.
54. *Computational Topology on Approximated Manifolds (with Applications in Engineering & Bioinformatics)*, Mathematics and Computer Science Colloquium, New Jersey Institute of Technology, October 1, 2004.
55. *How Does One Connect the Dots? (Topology for Surface Reconstruction)*, Computer Science Colloquium, City University of New York Graduate Center, March 21, 2002.
56. *Geometric Accuracy: Graphics Is Not the Only Show in Town!*, Year Opening Lecture at the NSF Science and Technology Center for Graphics and Visualization, Sept. 30, 1999, simultaneously broadcast nationally to Brown University, Cornell University, University of North Carolina at Chapel Hill, University of Utah and California Institute of Technology.
57. *Topological Semantics & Software Architecture*, Computer Science Group, Department of Mathematics, Wesleyan University, March 26, 1999, Middletown, CT
58. *Computational Geometry & Topology: Pure & Applied* Department of Mathematics, Tulane University, October 6, 1998, New Orleans, LA,
59. *'Pure' Mathematics as Multifaceted Career Preparation*, Vanderbilt University, Mathematics Club, Nov. 14, 1997
60. *Topological Constraints: Theory and Applications*, Department of Ocean Engineering, Massachusetts Institute of Technology, Cambridge, MA, Sept. 25, 1997.
61. *Semantics, Topology, and Software Engineering*, University of Montréal, Montréal, Québec, Canada, Oct. 15, 1996.
62. *Object Modeling to Localize Knowledge for Feature Interrelationships*, IFIP WG5.2 Knowledge Intensive CAD-II Workshop, Pittsburgh, Pennsylvania., Sept. 16-18, 1996.
63. *Topology, Spaghetti and Computer Aided Geometric Design*, Department of Ocean Engineering, Massachusetts Institute of Technology, Cambridge, MA, March 1, 1996.
64. *Creating and Maintaining Object-Oriented Relations Between Features*, Manufacturing Systems Integration Division, National Institute of Standards and Technology, Gaithersburg, MD October 6, 1995.
65. *Topology within Computer Aided Geometric Design*, Wesleyan University, Department of Mathematical and Computer Sciences, December 8, 1994.
66. *Topological Applications within Computer Aided Geometric Design*, Department of Computer Science, Oxford University, Oxford, England, June 23, 1994.

67. *Topological Spaces for the Design/Manufacturing Interface*, Department of Mechanical Engineering, Arizona State University, Tempe, AZ, November 5, 1993.
68. *Topology and the Design/Manufacturing Interface*, Département d'Informatique et de Recherche Opérationnelle, Université de Montréal, Montréal, Québec, October 12, 1993.
69. *Formal Properties of the Design/Manufacturing Interface*, Department of Mechanical Engineering, University of South Carolina, Columbia, SC, June 14, 1993.
70. *Fast Lines of Support and Culling for Intersections: 2D Results and 3D Directions*, Department of Computer Science, Arizona State University, Tempe, AZ, September 14, 1992.
71. *Encoding Mechanical Design Features for Recognition Via Neural Nets*, Department of Mechanical Engineering, Arizona State University, Tempe, AZ, November 6, 1991.
72. *Mathematics: Catalyst for Computer Science Applications & Research*, New College of the University of South Florida, Division of Natural Sciences, Natural Science Forum, March 22, 1991.
73. *Feature Recognition Within Mechanical Design Via Neural Network Pattern Recognition*, Rutgers University, Department of Electrical and Computer Engineering Seminar, November 12, 1990.
74. *The Great Value of Mathematics within Industrial Computing*, Lehman College Mathematics Club, Bronx, NY, March 28, 1990.
75. *Topology and Features in Computer Aided Design*, City University Topology Seminar, City College of New York, New York, N.Y., October 12, 1989.
76. *A Mathematician in Industry*, City College of New York Mathematics Club, New York, N.Y., October 12, 1989.

Industry and Government

77. *Topological Bio-molecular Steering*, Kitware Inc., March 23, 2012.
78. *Topological Bio-molecular Steering*, IBM Research, Zurich, February 23, 2012.
79. *Topological Bio-molecular Steering*, IBM Research, Cambridge, MA, December 15, 2011.
80. *Computational Topology for Scientific Visualization and Integration with Blue Gene*, January 29, 2006, IBM Watson Research Center, Hawthorne, NY.
81. *Topology for Macro-molecular Simulations*, June 2, 2004, IBM Watson Research Center, Yorktown Heights, NY.
82. *CAD-2K*, Prescient Technologies, Boston, MA, June 22, 1999.

83. *Knowledge Intensive CAD, Code Generation and Topological Relations*, United Technologies Engineering Coordination Activities, April 20, 1999, Cromwell, CT,
84. *Geometric Models — One Size No Longer Fits All!*, Implementation Road Map Conference, D. H. Brown, Dearborn, MI, October 26, 1999.
85. *Geometric Accuracy Through Simulation*, Aerospace Special Interest Group, United Technologies Corporation, East Hartford, CT, June 21, 1998.
86. *STEP Body-Checking Prototype & Beyond*, Pratt and Whitney, East Hartford, CT, June 5, 1998.
87. *Geometry, Topology, and Analyses*, Boeing, Seattle, WA, Mar. 27, 1998.
88. *Software Architecture*, CIGNA, January 22, 1998.
89. *Nearness Warning Algorithm*, PDES, Inc., January 8, 1998, Charleston, NC
90. *Nearness Warning and Express Body Checker Prototypes*, PDES, Inc., industrial consortium, Scottsdale, AZ, Sept. 11, 1997.
91. *Topology, Semantics and SFF Versus the Geometric Accuracy Problem*, Boeing, Seattle, WA, Jan. 10, 1997.
92. *Geometry Accuracy and Algorithmic Errors*, PDES, Inc., Scottsdale, AZ, September 9, 1997.
93. *STEP and Tolerances in Geometric Modeling*, STEP Tools, Inc., Troy, NY, June, 16, 1997
94. *Creating and Maintaining Object-Oriented Relations Between Features*, National Institute of Standards and Technology, Gaithersburg, MD October 6, 1995.
95. *Topological Spaces for Modeling Feature Conversions within Concurrent Engineering*, Department of Mathematics, General Motors Research and Development Center, Warren, MI, November 13, 1992.
96. *Sculptured Surfaces and Solid Modeling*
Northern Research and Engineering Corporation Conference on Current and Future Technology in Computer-Aided Engineering Bedford, MA, August 9, 1989.

Colloquia (on-campus)

97. PCK Seminar, Department of Computer Science & Engineering, April 16, 2012.
98. *Error Bounds on Intersections of Spline Surfaces – II*, Interdepartmental Seminar, Departments of Mathematics and of Computer Science and Engineering, University of Connecticut, Storrs, CT, November 7, 2001.

99. *Error Bounds on Intersections of Spline Surfaces – I*, Interdepartmental Seminar, Departments of Mathematics and of Computer Science and Engineering, University of Connecticut, Storrs, CT, October 31, 2001.
100. *When Eight = Infinity or Animation and Application of Space Filling Curves*, Seitelman, L. H. and Peters, T. J., Interdepartmental Seminar, Departments of Mathematics and of Computer Science and Engineering, University of Connecticut, Storrs, CT, October 3, 2001.
101. *Error Bounds on Intersections of Spline Surfaces*, Interdepartmental Seminar, Departments of Mathematics and of Computer Science and Engineering, University of Connecticut, Storrs, CT, October 31, 2001.
102. *Continuous Functions and Topological Spaces as Models within Computer Aided Design*, Department of Mathematics, University of Connecticut, Storrs, CT, March 4, 1993.
103. *Image Processing and Graphics*, The Fourth Annual Computing Research Review, Taylor L. Booth Center for Computer Applications and Research, May 14, 1992.
104. *Neural Net Encoding Schemes for CAD Feature Recognition*, The Third Annual Computing Research Review, Taylor L. Booth Center for Computer Applications and Research, May 22, 1991.
105. *Diagnostic Geometry & CAD Pattern Recognition*, The Second Annual Computing Research Review, Taylor L. Booth Center for Computer Applications and Research, May 24, 1990.

Contributed Presentations

International Conferences

1. *Geometry and Topology for Discrete Dynamics of Neurodevelopment*, (poster presentation), International Conference on Mathematical Neuroscience, Boulder, CO, May 30 - June 2, 2017
2. *Visual Experiments of Geometric Combinatorics for Neural Stem Cells and their Derivatives*, T. J. Peters, J. C. Conover, D. McManus, K. Pratt, Biology and Computational Biology Conference, Honolulu, HI, March 20 - 22, 2017.
3. *Moving Molecular Data for Mobile Visualization*, SIAM Annual Meeting, Boston, MA, July 11 - 15, 2016.
4. *Synchronous Visual Analytics on Petabytes of Molecular Simulations-Topology, Geometry and Numerics* SIAM Conference Geometric and Physical Modeling, Salt Lake City, Utah, Oct. 12 - 14, 2015.

5. *A Cautionary Example for Topological Consistency in Molecular Movies*, Fall Workshop on Computational Geometry, University of Connecticut, Storrs, CT, October 31 - November 1, 2014.
6. *Topology and Numerical Analysis in Molecular Simulations*, SIAM Annual Meeting, Chicago, IL, July 7 - 11, 2014.
7. *Topologically Informed, Geometrically Robust Molecular Visualization*, SIAM Conference on Geometric and Physical Modeling, Denver, CO, November 11 - 14, 2013.
8. *Crystallizing Topology in Molecular Visualizations* Bridges, Towson 2012, Towson University, Towson, MD, July 25-29, 2012
9. *Constructive approximation of parametric 2-manifolds*, 20th Annual Fall Workshop on Computational Geometry, October 29-30, 2010, Stony Brook University, Stony Brook, NY
10. *Topological modeling for movies and simulations*, 2009 SIAM/ACM Joint Conference on Geometric and Physical Modeling, Oct. 5 - 8, 2009, San Francisco, CA
11. *Foundations for visualizing 1-manifolds* Jordan, K. E., Moore, E. L. F., Peters, T. J. and Russell, A. C., TopInVis, Feb. 23 - 24, Snowbird, Utah, 2009.
12. *Computational Topology for the Film Industry*, 2007 SIAM Conference on Mathematics for Industry, Oct. 10, 2007, Philadelphia, PA
13. *Ambient Isotopic Approximation for Surface Reconstruction & Interval Solids*, Peters, T. J. and Sakkalis, T., Eighth ACM Symposium on Solid Modeling and Applications, Seattle, Washington, June 16 - 20, 2003.
14. *The Algebra of Regular Closed Sets – Theory Versus Computation* Summer Topology Conference, Washington, D. C., June 4 - 7, 2003.
15. *Computational Topology for CFD: Theorems, Criteria and Issues*, Peters, T. J., Stewart, N. F., First MIT Conference on Computational Fluid and Solid Mechanics, Cambridge, MA, June 14, 2001.
16. *Algorithmic Tolerances and Semantics in Data Exchange*, Peters, T. J., Stewart, N. S., Ferguson, D. R., and Fussell, P. S., 1997 ACM Symposium on Computational Geometry, Nice, France, June 4 - 6, 1997.
17. *Geometric Topology, Computer Aided Geometric Design and Software Engineering Education*, 11th Summer Conference on General Topology and Applications, University of Southern Maine, Maine, June 14, 1995.
18. *Boundary Triangulations, Correct Topological Form and Perturbation Propagation in Tolerance Specification*, The Third International Conference on Mathematical Methods in Computer Aided Geometric Design Ulvik, Norway June 16-21, 1994.

19. *Feature-based modeling by object-oriented design with propagation*, Peters, T. J., Demurjian, S. A., Ting, T.C., and Glovin, S., Proceedings of 1994 International Conference on Data and Knowledge Systems for Manufacturing and Engineering, Hong Kong, May 1994.
 20. *Topological Spaces for Modeling Feature Conversions from Design to Manufacturing*, SIAM, CAGD Conference, Tempe, AZ, November 4, 1993.
 21. *Topological fidelity in surface reconstruction*, Peters, T. J., Greenshields, I., Dorney, S. M., Curves and Surfaces in Computer Vision and Graphics III, OE/Technology '92, Society of Photo-Optical Instrumentation Engineers, Boston, MA, November 17, 1992.
 22. *Combinatorial Analysis for Feature Recognition*, Fourth International ASME Conference on Design Theory and Methodology 1992, Scottsdale, AZ, September 13 - 16, 1992.
 23. *Geometric Relationships for Feature Recognition Via Neural Nets*, reviewed abstract, Second SIAM Conference on Geometric Design, Tempe, AZ, November 7, 1991.
 24. *Parallel Strategies in the Reconstruction of Surfaces from Contour Data*, Fourth ISMM International Conference on Parallel and Distributed Computing and Systems, Washington, D. C., October 11, 1991.
 25. *Four examples demonstrating the unusual behavior of remote points*, meeting date?
 26. *Remote points and locally finite families*, 91st Annual Meeting of the American Mathematical Society, January 9 - 13, 1985.
 27. *Strong G-spaces and remote points*, 89th Annual Meeting of the American Mathematical Society, January 5 - 9, 1983.
 28. *Remote points and products of σ - π spaces*, 88th Annual Meeting of the American Mathematical Society, January 13 - 17, 1982.
- Colloquia (on-campus)
29. *Features and Imaging and Graphics Research Review*, University of Connecticut, Department of Computer Science and Engineering, Imaging and Graphics Laboratory Seminar, February 11, 1991.
 30. *Recognizing Mechanical Design Features with Neural Nets*, University of Connecticut, Department of Electrical and Systems Engineering, Neural Net Seminar, November 19, 1991.
 31. *Pattern Recognition for Features*, University of Connecticut, Department of Computer Science and Engineering, Imaging and Graphics Laboratory Seminar, October 30, 1989.
 32. *Feature Recognition in Mechanical Design*, University of Connecticut, Department of Electrical and Systems Engineering, Neural Net Seminar, November 2, 1989.

Additional, Major Professional Service

(Partial listing only, of *major* external activities.)

- Multiple Roles within Society of Industrial and Applied Mathematicians (SIAM)
 - Chair, SIAM Activity Group on Geometric Design, 2015 - 2017.
 - *Secretary*, SIAM Activity Group on Geometric Design, 2011 - 2013.
 - *Co-Editor*, SIAM Proceedings Volume: “Mathematics for Industry: Challenges and Frontiers, 2009”.
 - *Co-Editor*, SIAM Proceedings Volume: “Mathematics for Industry: Challenges and Frontiers, 2003”.
 - *Organizing Committee and Program Committee Member* for the SIAM 2009 Conference entitled “Mathematics for Industry: Challenges and Frontiers”, San Francisco, CA, October 9 - 10, 2009.
 - *Organizing Committee and Program Committee Member* for the SIAM 2007 Conference entitled “Mathematics for Industry: Challenges and Frontiers”, Philadelphia, PA, October 9 - 11, 2007.
 - *Organizing Committee and Program Committee Member* for the SIAM 2005 Conference entitled “Mathematics for Industry: Challenges and Frontiers”, Detroit, MI, October 24 - 26, 2005.
 - *Program Co-Chair* for the SIAM 2003 Conference entitled “Mathematics for Industry: Challenges and Frontiers”, Toronto, Canada, October 13 - 15, 2003.
 - *Organizing Committee*, Society of Industrial and Applied Mathematics, Workshop on Mathematical Foundations for Features in Computer-Aided Design, Engineering and Manufacturing, October 22-23, 1998, Troy, MI.
- Organizing Committee, 2014 Fall Workshop on Computational Geometry, University of Connecticut.
- Journal of Computational Design and Engineering, editorial board, 2013 –
- *Guest Editor*, special issue, “Computational Topology” of the journal, Applied General Topology, summer 2007.
- *Technical Advisory Board Member*, Annual Review Panel for the Army Research Laboratories, National Academy of Sciences, 2006 – 2008.
- *Organizing Committee*, Semantics Miniconference, University of Southern Maine, Portland, ME, May 14, 1997.
- *Guest Editor 1992 - 1993*, Special Issue on Features, Research in Engineering Design, Vol. 5, Nos. 3 & 4.
- Reviews for Funding Agencies and Journals (partial listing only)
 - **Funding Agencies:** National Science Foundation (for computer science, mathematics, engineering, small business innovative research), National Science & Engineering Research Council of Canada, The New York Academy of Sciences, Connecticut Innovations, Inc., City University of New York Research Foundation, University of Connecticut Research Foundation

- **Journals and Conferences:** ACM Transactions on Graphics; IEEE Transactions on Visualization and Computer Graphics; Computer Aided Geometric Design; Computer Aided Design; Journal of Mathematical Imaging and Vision; ACM Symposium on Computational Geometry; ACM Siggraph; Graphics Interface Conference; ACM Solids Modeling Conference; Artificial Intelligence in Engineering Design, Analysis and Manufacturing; Research in Engineering Design; IEEE Transactions on Robotics and Automation.

Professional Memberships:

American Mathematical Society, Society for Industrial and Applied Mathematics (SIAM), SIAM Activity Group on Geometric Design (SIAG/GD).

Doctoral Student Mentoring:

- H. P. Cassidy, 2014, (Data Scientist, LeanTaas Corporation).
- J. Li, 2013, (Data Scientist, LeanTaas Corporation).
- L. E. Miller, 2009, (Assistant Professor, University of Arkansas) (co-advisor with A. C. Russell).
- E. L. F. Moore, 2006, (Software engineer, CNC Software, Inc., Tolland, CT).
- D. M. Needham, August, 1997 (Professor, Computer Science, United States Naval Academy)(co-advisor with S. A. Demurjian).
- S. M. Dorney, June 1994 (Research scientist at NASA, Huntsville, AL).
- K. Marinelli, (System Manager, Department of Mathematics, University of Connecticut, expected completion, 2018).

Masters Students Completed:

T. Zhang, December, 2014; D. Marsh, December 2010; D. Shah, June 2005; J. Bisceglia, January 2003; C. Mow, June, 2002; K. Makles, January 2002; Z. Dong, June, 2000; Z. Lainwala, June, 1998; B. Brett, January 1996; T. Ye, June 1995; V. Toscano, June 1993.