Curriculum Vitae

Gregory E. Fasshauer

Education

VANDERBILT UNIVERSITY

Ph.D. in Mathematics, May 1995
Supervisor: Larry L. Schumaker, Stevenson Professor
Thesis: *Radial Basis Functions on the Sphere*

M.A. in Mathematics, May 1993
Supervisor: Larry L. Schumaker, Stevenson Professor
Thesis: *Multi-Patch Parametric Surfaces with Minimal Energy*

UNIVERSITÄT STUTTGART

Diplom in Mathematics, June 1991
Supervisor: Prof. Klaus Höllig
Thesis: C^1*-Blending mit Bézierdreiecken*

First Staatsexamen (High school teacher's degree)
Mathematics (June 1991) & English (October 1990)

Employment

COLORADO SCHOOL OF MINES

Professor and Head, Department of Applied Mathematics and Statistics, since August 2016.

ILLINOIS INSTITUTE OF TECHNOLOGY

Professor, Department of Applied Mathematics, June 2009–August 2016.

Associate Chair and Director of Undergraduate Studies, Department of Applied Mathematics, August 2005–August 2016.

Associate Professor, Department of Applied Mathematics, June 2003–May 2009.

Assistant Professor, Department of Applied Mathematics, October 1998–May 2003.

Assistant Professor of Applied Mathematics, Department of Computer Science and Applied Mathematics, September 1997–October 1998.

NORTHWESTERN UNIVERSITY

Ralph P. Boas Visiting Assistant Professor, Emphasis Year in Analysis, Department of Mathematics, September 1995–August 1997.

SHORT-TERM VISITING POSITIONS

Università degli Studi di Torino, Italy, Department of Mathematics, May 2015.

Università degli Studi di Padova, Italy, Department of Mathematics, June–July 2011.

University of New South Wales, Sydney, Australia, School of Mathematics and Statistics, February 15–March 6, 2009.

Research Interests

Meshfree Methods for multivariate approximation (reproducing kernel methods, radial basis functions, positive definite kernels, space-time kernels, moving least squares and related methods),

Applications of Meshfree Methods (solvers for EEG and MEG scans, vibration analysis of composite beams and plates, options pricing, surface and solid model compression, image compression, gas-dynamics, optimal design of optical lenses),

Numerical Analysis (meshfree pseudospectral methods, stable computation, solution of differential and integral equations, Nash iteration, multilevel algorithms, fast summation methods),

Functional Analysis (reproducing kernel Hilbert spaces, Hilbert–Schmidt expansions, Green's functions),

Approximation Theory (approximation on spheres, approximate approximation),

Statistics and Stochastics as related to meshfree methods (kriging, Gaussian random fields, cross-validation, maximum likelihood and Bayesian estimation, Karhunen–Loève expansions, Wiener chaos, numerical methods for SPDEs),

Computer-Aided Geometric Design (minimal energy surfaces, geometric continuity),

Multivariate Splines (approximation with multivariate splines, dimensions of multivariate spline spaces).

Grants Awarded

NSF-DMS #1551537, *15th International Conference on Approximation Theory* (Co-PI), March 1, 2016–February 28, 2017.

NSF-DMS #1522687, *Stable, Efficient, Adaptive Algorithms for Approximation and Integration* (Co-PI), July 1, 2015–June 30, 2018.

NSF-DMS #1243266, *14th International Conference on Approximation Theory* (Co-PI), April 1, 2013–March 31, 2014.

NSF-DMS #1115392, *Kernel Methods for Numerical Computation* (Co-PI), July 1, 2011–June 30, 2014.

University of Padua, *Numerical treatment of ill-posed linear problems with applications* (external consultant), funded January 2011.

NSF-DMS #0923111, *Scientific Computing Research Environments for the Mathematical Sciences (SCREMS) at IIT* (Co-PI), Aug. 1, 2009–July 31, 2010.

NSF-DMS #0713848, REU Supplement to *Fast and Accurate High Dimensional Function Approximation*, (Co-PI), July 15, 2007–June 30, 2010.

IIT-TGIF, *Creating a* MATLAB *Module for New Applied Mathematics Undergraduates*, (PI), Fall 2007 semester.

NSF-DMS #0713848, *Fast and Accurate High Dimensional Function Approximation*, (Co-PI), July 15, 2007–June 30, 2011.

Research in Pairs, *Theory and Application of Scattered Data Surface Fitting on the Sphere and other Compact Manifolds using the Meshfree Approximate Approximation Method*, Mathematisches Forschunginstitut Oberwolfach, May–June, 2004.

NSF-DMS #0225130, *Multilevel Algorithms for the Numerical Solution of Partial Differential Equations using Compactly Supported Radial Basis Functions*, (PI), REU supplement, Aug. 1 2002–July 31, 2003.

NSF-DMS #0112351, *Scientific Research Environments in the Mathematical Sciences* (Co-PI), Sept. 1, 2001–Aug. 31, 2003.

NSF-DMS #0073636, *Multilevel Algorithms for the Numerical Solution of Partial Differential Equations using Compactly Supported Radial Basis Functions*, (PI), Aug. 1, 2000–July 31, 2003.

Fellowships and Other Honors

Distinguished Teaching Fellow, College of Science (and Letters), IIT, 2012–2016.

Appointed to the **Menger Prize Committee**, American Mathematical Society (AMS), June 1, 2009–May 31, 2012. Chair of committee, June 1, 2010–May 31, 2012.

Dean's Excellence Award for Teaching, College of Science and Letters, IIT, 2007.

Fellow of Wessex Institute of Technology, Great Britain, 2003.

Departmental Fellowship, Department of Computer Science and Applied Mathematics, Illinois Institute of Technology, 1998, 1999.

Bjarni Jónsson Prize for Research, Vanderbilt University, April 1995.

Dissertation Enhancement Award, Vanderbilt University, April 1994.

SIAM Student Travel Award, October 1993.

Teaching Fellowship, Vanderbilt University, August 1991–May 1995.

Teaching Assistantship, Universität Stuttgart, October 1986–June 1990.

Publications

Books

1. (with M. J. McCourt) *Kernel-based Approximation Methods using* MATLAB, Interdisciplinary Mathematical Sciences Vol. 19, World Scientific Publishers, Singapore, 2015.
2. (with L. L. Schumaker (Eds.)) *Approximation Theory XIV: San Antonio 2013*, Springer Proceedings in Mathematics & Statistics Vol. 83, 2014.
3. (with A. J. M. Ferreira, E. J. Kansa, and V. M. A. Leitão (Eds.)) *Progress on Meshless Methods*, Springer, 2009.
4. *Meshfree Approximation Methods with* MATLAB, Interdisciplinary Mathematical Sciences Vol. 6, World Scientific Publishers, Singapore, 2007.

Book Chapters

1. Meshfree Methods, in *Handbook of Theoretical and Computational Nanotechnology*, Vol. 2, M. Rieth and W. Schommers (eds.), American Scientific Publishers, 2006, pp. 33–97.

Peer-refereed Articles

1. (with J. Rashidinia and M. Khasi) A stable method for the evaluation of Gaussian radial basis function solutions of interpolation and collocation problems, Comput. Math. Applic. **72**/1 (2016), 178–193.

2. (with G. Ala, E. Francomano, S. Ganci and M. McCourt) The method of fundamental solutions in solving coupled boundary value problems for M/EEG, SIAM J. Sci. Comput. **37**/4 (2015), B570–B590.

3. (with G. Ala, E. Francomano, S. Ganci and M. McCourt) A meshfree solver for the MEG forward problem, IEEE T. Magn. **51**/3 (2015), 1–4.

4. (with R. Cavoretto and M. McCourt) An introduction to the Hilbert–Schmidt SVD using iterated Brownian bridge kernels, Numerical Algorithms **86** (2015), 393–422.

5. (with F. Hickernell and Q. Ye) Solving support vector machines in reproducing kernel Banach spaces with positive definite functions, Appl. Comput. Harmon. Anal. **38**/1 (2015), 115–139.

6. (with Z. Berkaliev, S. Devi, F. J. Hickernell, O. Kartal, X. Li, P. McCray, S. Whitney, and J. S. Zawojewski) Initiating a programmatic assessment report, PRIMUS **24**/5 (2014), 403–420; Corrigendum: Getting students to think computationally: Initiating a programmatic assessment report, PRIMUS, **24**/9-10 (2014), 904.

7. (with Q. Ye) A kernel-based collocation method for elliptic partial differential equations with random coefficients, in *Monte Carlo and Quasi-Monte Carlo Methods 2012*, J. Dick, F. Y. Kuo, G. W. Peters, I. H. Sloan (eds.), Springer Proceedings in Mathematics and Statistics Vol. 65, 2014, 331–347.

8. (with Q. Ye) Kernel-based collocation methods versus Galerkin finite element methods for approximating elliptic stochastic partial differential equations, in *Meshfree Methods for Partial Differential Equations VI*, M. A. Schweitzer (ed.), Springer, 2013, 155–170.

9. (with Q. Ye), Reproducing kernels of Sobolev spaces via a Green function approach with differential operators & boundary operators, Adv. Comp. Math. **38**/4 (2013), 891–921.

10. (with I. Cialenco and Q. Ye) Approximation of stochastic partial differential equations by a kernel-based collocation method, Int. J. Comput. Math. **89**/18 (2012), 2543–2561.

11. (with F. J. Hickernell and H. Woźniakowski) Average case approximation: convergence and tractability of Gaussian kernels, in *Monte Carlo and Quasi-Monte Carlo Methods 2010*, H. Woźniakowski and L. Plaskota (eds.), Springer Proceedings in Mathematics and Statistics 23, (2012), 309–324.

12. (with M. J. McCourt) Stable evaluation of Gaussian radial basis function interpolants, SIAM J. Sci. Comput. **34**/2 (2012), A737–A762.

13. (with F. J. Hickernell and H. Woźniakowski) On dimension-independent rates of convergence for function approximation with Gaussian kernels, SIAM J. Numer. Anal. **50**/1 (2012), 247–271.

14. (with G. Song, J. Riddle, and F. J. Hickernell), Multivariate interpolation with increasingly flat radial basis functions of finite smoothness, Adv. Comp. Math. **36**/3 (2012), 485–501.

15. Positive definite kernels: Past, present and future, Dolomites Research Notes on Approximation **4** (2011), 21–63.

16. (with Q. Ye), Reproducing kernels of generalized Sobolev spaces via a Green function approach with distributional operators, Numer. Math. **119**/3 (2011), 585–611.

17. (with P. T. Vu) Application of two radial basis function pseudospectral meshfree methods to three-dimensional electromagnetic problems, IET Science, Measurement & Technology **5**/6 (2011), 206–210.

18. Green's functions: taking another look at kernel approximation, radial basis functions and splines, in Approximation Theory XIII: San Antonio 2010, M. Neamtu and L. Schumaker (eds.), Springer Proceedings in Mathematics Vol. 13 (2011), 37–63.

19. (with O. Cakmakci, I. Kaya, K. P. Thompson, and J. P. Rolland) Application of radial basis functions to represent optical free-form surfaces, International Optical Design Conference (IODC), Jackson Hole, WY (2010), DOI: 10.1117/12.871820.

20. (with C. M. C. Roque, A. J. M. Ferreira, A. M. A. Neves, C. M. M. Soares, and R. M. N. Jorge) Dynamic analysis of functionally graded plates and shells by radial basis functions, Mechanics of Advanced Materials and Structures **17**/8 (2010), 636–652.

21. (with A. J. M. Ferreira and R. C. Batra) Natural frequencies of thick plates made of orthotropic, monoclinic, and hexagonal materials by a meshless method, Journal of Sound and Vibration **319** (2009), 984–992.

22. (with O. Cakmakci, H. Foroosh, J. P. Rolland, and K. P. Thompson) Meshfree approximation methods for free-form surface representation in optical design with applications to head-worn displays, Proc. SPIE (invited paper) **7061**, 70610D (2008), doi:10.1117/12.798351.

23. (with A. J. M. Ferreira, R. C. Batra, and J. D. Rodrigues) Static deformations and vibration analysis of composite and sandwich plates using a layerwise theory and RBF-PS discretizations with optimal shape parameter, Compos. Struct. **86** (2008), 328–342.

24. (with J. G. Zhang) Preconditioning of radial basis function interpolation systems via accelerated iterated approximate moving least squares approximation, in *Progress on Meshless Methods*, A. J. M. Ferreira, E. J. Kansa, G. E. Fasshauer and V. M. A. Leitão (eds.), Springer, 2008, 57–75.

25. (with A. Khaliq and D. Voss) A parallel time stepping approach using mesh-free approximations for pricing options with non-smooth payoffs, J. of Risk **10**/4 (2008), 135–142.

26. (with J. F. Erickson) Generalized native spaces, in *Approximation Theory XII: San Antonio 2007*, M. Neamtu and L. L. Schumaker (eds.), Nashboro Press, 2008, 133–142.

27. (with A. J. M. Ferreira) An RBF-pseudospectral approach for the static and vibration analysis of composite plates using a higher-order theory, Int. J. Computational Methods in Engineering Science & Mechanics **8** (2007), 323–339.

28. (with J. G. Zhang) On choosing "optimal" shape parameters for RBF approximation, Numerical Algorithms **45** (2007), 345–368.

29. (with J. G. Zhang) Scattered data approximation of noisy data via iterated moving least squares, in *Curve and Surface Fitting: Avignon 2006*, T. Lyche, J. L. Merrien and L. L. Schumaker (eds.), Nashboro Press, 2007, 150–159.

30. (with A. J. M. Ferreira, C. M. C. Roque, R. M. N. Jorge, and R. C. Batra) Analysis of functionally graded plates by a robust meshless method, Mechanics of Advanced Materials and Structures **14**/8 (2007), 577–587.

31. (with A. J. M. Ferreira) Computation of static deformations and natural frequencies of shear deformable plates by an RBF-pseudospectral method with an optimal shape parameter, in *Advances in Meshfree Techniques*, V. M. A. Leitao, C. Alves and C. A. Duarte (eds.), Springer, 2007, 283–310.

32. (with J. G. Zhang) Iterated approximate moving least squares approximation, in *Advances in Meshfree Techniques*, V. M. A. Leitao, C. Alves and C. A. Duarte (eds.), Springer, 2007, 221–240.

33. (with A. J. M. Ferreira) Analysis of natural frequencies of composite plates by an RBF-pseudospectral method, Composite Structures **79** (2007), 202–210.

34. (with A. J. M. Ferreira) Computation of natural frequencies of shear deformable beams and plates by an RBF-pseudospectral method, Comput. Methods Appl. Mech. Engrg. **196** (2006), 134–146.

35. Dual bases and discrete reproducing kernels: a unified framework for RBF and MLS approximation, J. Engineering Analysis with Boundary Elements **29** (2005), 313–325.

36. RBF collocation methods as pseudospectral methods, in *Boundary Elements XXVII*, A. Kassab, C. A. Brebbia, E. Divo, and D. Poljak (eds.), WIT Press, Southampton, 2005, 47–56.

37. (with J. G. Zhang) Recent results for moving least squares approximation, in *Geometric Modeling and Computing: Seattle 2003*, M. L. Lucian and M. Neamtu (eds.), Nashboro Press, Brentwood, TN, 2004, 163–176.

38. (with A. Khaliq and D. Voss) Using meshfree approximation for multi-asset American option problems, J. of the Chinese Institute of Engineers **27** (2004), 563–571.

39. Toward approximate moving least squares approximation with irregularly spaced centers, Computer Methods in Applied Mechanics & Engineering **193** (2004), 1231–1243.

40. (with E. Kansa, H. Power, and L. Ling) A volumetric integral radial basis function method for time-dependent partial differential equations: I. Formulation, Journal of Engineering Analysis with Boundary Elements **28**/10 (2004), 1191–1206.

41. Approximate moving least-squares approximation: a fast and accurate multivariate approximation method, in *Curve and Surface Fitting: Saint-Malo 2002*, A. Cohen, J.-L. Merrien, and L. L. Schumaker (eds.), Nashboro Press, 2003, 139–148.

42. Approximate moving least-squares approximation with compactly supported weights, in *Lecture Notes in Computer Science and Engineering Vol. 26: Meshfree Methods for Partial Differential Equations*, M. Griebel and M. A. Schweitzer (eds.), Springer, 2002, 105–116.

43. Matrix-free multilevel moving least-squares methods, in *Approximation Theory X: Wavelets, Splines, and Applications*, C. K. Chui, L. L. Schumaker, and J. Stöckler (eds.), Vanderbilt University Press, 2002, 271–281.

44. Newton iteration with multiquadrics for the solution of nonlinear PDEs, Comput. Math. Applic. **43** (2002), 423–438. (special issue on radial basis functions, invited paper)

45. Nonsymmetric multilevel RBF collocation within an operator Newton framework for nonlinear PDEs, in *Trends in Approximation Theory*, K. Kopotun, T. Lyche, and M. Neamtu (eds.), Vanderbilt University Press, 2001, 103–112.

46. (with E. C. Gartland and J. W. Jerome) Newton iteration for partial differential equations and the approximation of the identity, Numerical Algorithms **25** (2000), 181–195.

47. (with E. C. Gartland and J. W. Jerome) Algorithms defined by Nash iteration: some implementations via multilevel collocation and smoothing, J. Comp. Appl. Math. **119** (2000), 161–183.

48. Solving differential equations with radial basis functions: multilevel methods and smoothing, Adv. Comp. Math. **11** (1999), 139–159. (special issue on radial basis functions, invited paper)

49. On the numerical solution of differential equations with radial basis functions, in *Boundary Element Technology XIII*, C. S. Chen, C. A. Brebbia, and D. W. Pepper (eds.), WIT Press, 1999, 291–300.

50. (with J. W. Jerome) Multistep approximation algorithms: improved convergence rates through postconditioning with smoothing kernels, Adv. Comp. Math. **10** (1999), 1–27.

51. On smoothing for multilevel approximation with radial basis functions, in *Approximation Theory XI, Vol.II: Computational Aspects*, C. K. Chui and L. L. Schumaker (eds.), Vanderbilt University Press, 1999, 55–62.

52. Hermite interpolation with radial basis functions on spheres, Adv. Comp. Math. **10** (1999), 81–96.

53. (with L. L. Schumaker) Scattered data fitting on the sphere, in *Mathematical Methods for Curves and Surfaces II*, M. Dæhlen, T. Lyche, and L. L. Schumaker (eds.), Vanderbilt University Press, 1998, 117–166. (invited survey paper)

54. Solving partial differential equations by collocation with radial basis functions, in *Surface Fitting and Multiresolution Methods*, A. Le Méhauté, C. Rabut, and L. L. Schumaker (eds.), Vanderbilt University Press, 1997, 131–138.

55. (with L. L. Schumaker) Minimal energy surfaces using parametric splines, Computer-Aided Geometric Design **13** (1996), 45–79.

56. Adaptive least squares fitting with radial basis functions on the sphere, in *Mathematical Methods for Curves and Surfaces*, M. Dæhlen, T. Lyche, and L. L. Schumaker (eds.), Vanderbilt University Press, 1995, 141–150.

Submitted for Publication

1. (with P. K. Mishra, S. K. Nath and M. K. Sen) Hybrid Gaussian-cubic radial basis function for scattered data interpolation.

2. (with G. Ala, E. Francomano, S. Ganci and M. McCourt) An augmented MFS approach for brain activity reconstruction.

3. (with M. McCourt) Stable likelihood computation for Gaussian random fields.

Other Publications

1. (with G. Ala, E. Francomano, S. Ganci, M. McCourt and S. Vitabile) A Novel Numerical Meshless Approach for Electric Potential Estimation in tDCS, 11th International Conference of Computational Methods in Sciences and Engineering, Athens, Greece, 2015, poster.

2. (with G. Ala, E. Francomano, S. Ganci and M. McCourt) An improved solver for the M/EEG problem, 16th Biennial IEEE Conference on Electromagnetic Field Computation, Annecy, France, 2014, extended abstract, 1 page.

3. (with G. Ala, E. Francomano, S. Ganci and M. McCourt) Un solutore meshfree per EEG/MEG, ET 2013 XXIX Riunione Annuale dei ricercatori di Elettrotecnica, Padova, Italy, 2013, extended abstract, 2 pages.

4. (with M. J. McCourt) Stable computation with Gaussian RBFs, Meshless Methods in Science and Engineering, Porto, Portugal, 2012, extended abstract, 10 pages.

5. (with O. Cakmakci, I. Kaya, K. Thompson, and J. P. Rolland) Application of radial basis functions to represent optical freeform surfaces, Optical Society of America, 2010.

6. Review of *Linear Functional Analysis* by Bryan P. Rynne and Martin A. Youngson, SIAM Review **52**/1 (2010), 186–189.

7. Review of *Approximate Approximations* by V. Maz'ya and G. Schmidt, J. Approx. Theory **162** (2010), 221–224.

8. *Tutorial on Meshfree Approximation Methods with* MATLAB at Dolomites Research Week on Approximation 2008, Dolomites Research Notes On Approximation **1**, 2008, ISSN: 2035-6803, `http://drna.padovauniversitypress.it/volume/1`.

9. About Karl Menger, 6 page booklet, Department of Applied Mathematics, IIT, 2008.

10. (with J. G. Zhang) Preconditioning of radial basis function interpolation systems via accelerated iterated approximate moving least squares approximation, ECCOMAS Conference on Meshless Methods, Porto, Portugal, 2007, extended abstract, 6 pages.

11. Preface to *Radial Basis Functions and Related Multivariate Meshfree Approximation Methods: Theory and Applications*, Comp. Math. Applic. **51**/8 (2006), xiii–xv.

12. Review of *Scattered Data Approximation* by H. Wendland, SIAM Review, **48**/3 (2006), 607–609.

13. (with A. J. M. Ferreira, C. M. C. Roque, and R. M. N. Jorge) Static deformations and natural frequencies of functionally graded plates by an hybrid meshless method, in Solids, Structures and Coupled Problems in Engineering, C. A. Mota Soares et al. (eds.), 2006.

14. (with J. G. Zhang) Radial basis function interpolation versus iterated moving least squares approximation, ECCOMAS Conference on Meshless Methods, Lisbon, Portugal, 2005, extended abstract, 6 pages.

15. RBF collocation methods and pseudospectral methods, IIT, technical report, 2004.

16. (with A. Khaliq and D. Voss) A parallel time stepping approach using meshfree approximations for pricing options with non-smooth payoffs, in Proceedings of Third World Congress of the Bachelier Finance Society, Chicago, 2004.

17. Review of *A Course in Approximation Theory* by E. W. Cheney and W. A. Light, American Mathematical Monthly, May 2004, 448–452.

18. Dual bases and discrete reproducing kernel Hilbert spaces: a unified framework for RBF and MLS approximation, International Workshop on MeshFree Methods, Lisbon, Portugal, 2003, extended abstract, 6 pages.

19. High-order moving least-squares approximation via fast radial Laguerre transforms, IIT, technical report, 2003.

20. (with C. Curtis) A tree code implementation for the fast Gauss transform, IIT, technical report, 2003.

21. Approximate moving least-squares approximation for time-dependent PDEs, in *WCCM V, Fifth World Congress on Computational Mechanics*, H. A. Mang, F. G. Rammerstorfer, and J. Eberhardsteiner (eds.), Vienna University of Technology, 2002.

22. On the density of certain classes of radial basis functions on the sphere, Vanderbilt University, technical report, 1994.

23. Scattered data interpolation with radial basis functions on the sphere, Vanderbilt University, technical report, 1994.

Translations

1. Assisted translating (German to English): Trott, M., *The Mathematica Guidebook*, Telos, 1996.

2. Assisted translating (German to English): Hoschek, J., and D. Lasser, *Fundamentals of Computer Aided Geometric Design*, AK Peters, 1993.

Editorial Responsibilities

Dolomites Research Notes on Approximation (DRNA), member, editorial board, 2010 to present.

Engineering Analysis with Boundary Elements, member, editorial board, 2003–2010.

International Journal of Computer Mathematics, member, editorial board, 2006–2008.

Computers & Mathematics with Applications, **51**/8, pp. 1223–1366, 2006, *Radial Basis Functions and Related Multivariate Meshfree Approximation Methods: Theory and Applications*, Guest editor.

Proceedings of the 2nd ECCOMAS Thematic Conference on Meshless Methods, FEUP, Edies INEGI, July 2007, editor.

Proceedings of the 2007 International Conference on Computational and Mathematical Methods in Science and Engineering, June 2007, associate editor.

Midwest Numerical Analysis, member of steering committee and webmaster, 2006 to 2016.

Conference Organization

15th International Conference on Approximation Theory, May 2016, San Antonio, Texas, co-organizer (with Larry L. Schumaker).

14th International Conference on Approximation Theory, April 2013, San Antonio, Texas, co-organizer (with Larry L. Schumaker).

2nd ECCOMAS Thematic Conference on Meshless Methods, July 2007, Porto, Portugal, co-organizer (with A. J. M. Ferreira, E. J. Kansa, and V. M. A. Leitão).

7th International Conference on Computational and Mathematical Methods in Science and Engineering, Chicago, Illinois, June 2007, local chair.

Midwest Numerical Analysis Day, Chicago, Illinois, June 2007, organizer.

Midwest Numerical Analysis Day, Chicago, Illinois, April 1999, co-organizer (with George Byrne).

SIAM Annual Meeting, *Advances in Kernel Methods for Analysis and Statistics*, Chicago, IL, July 2014, Minisymposium co-organizer (with Mike McCourt).

MCQMC 2006: 7th International Conference on Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing, Ulm, Germany, August 2006, Minisymposium co-organizer (with Fred Hickernell).

4th SIAM Conference on Geometric Design, Nashville, Tennessee, November 1995, Minisymposium co-organizer (with Richard Franke).

Meshfree Methods, Research seminar organized together with Fred Hickernell, Department of Applied Mathematics, IIT, Fall 2005 – 2016.

Applied Mathematics Seminar and Colloquium, Department of Applied Mathematics, IIT, Fall 1999 – Fall 2005, more than 100 talks organized.

9th International Conference on Mathematical Methods for Curves and Surfaces, June 2016, Tønsberg, Norway, International Scientific Committee.

14th International Conference Computational and Mathematical Methods in Science and Engineering, July 2014, Rota, Cadiz, Spain, International Scientific Committee.

13th International Conference Computational and Mathematical Methods in Science and Engineering, June 2013, Cabo de Gata, Almeria, Spain, International Scientific Committee.

33rd International Conference "Boundary Element Methods and other Mesh Reduction Methods", June 2011, New Forest, UK, International Scientific Committee.

ICCES Special International Symposium on "Meshless & Other Novel Computational Methods", August 2010, Pusan, South Korea, International Scientific Committee.

ICCES Special International Symposium on "Meshless & Other Novel Computational Methods", August 2009, Ljubljana, Slovenia, International Scientific Committee.

31st International Conference "Boundary Element Methods and other Mesh Reduction Methods", June 2009, New Forest, UK, International Scientific Committee.

30th International Conference "Boundary Element Methods and other Mesh Reduction Methods", June 2008, Maribor, Slovenia, International Scientific Committee.

29th International Conference "Boundary Element Methods and other Mesh Reduction Methods", June 2007, New Forest, UK, International Scientific Committee.

28th International Conference "Boundary Element Methods and other Mesh Reduction Methods", May 2006, Skiathos, Greece, International Scientific Committee.

ECCOMAS Thematic Conference on Meshless Methods, July 2005, Lisbon, Portugal, International Scientific Committee.

27th International Conference "Boundary Element Methods and other Mesh Reduction Methods", March 2005, Orlando, Florida, International Scientific Committee.

Short Courses Given

- **Università degli Studi di Torino** (Italy), 8 hours of lectures over two weeks on *Kernel-based Numerical Solution of Partial Differential Equations*, May 2015.
- **Università degli Studi di Palermo** (Italy), week-long workshop on *Meshfree Kernel-Based Approximation Methods*, July 2011.
- **Dolomites Research Week on Approximation**, Alba di Canazei, Trento (Italy), week-long tutorial on *Meshfree Approximation Methods with* MATLAB, September 2008.

Conferences Attended

1. Invited lecture at **Multivariate Approximation and Interpolation with Applications** (MAIA 2016), *Some Recent Insights into Computing with Positive Definite Kernels*, Luminy, France, September 2016.
2. Invited plenary lecture at **9th International Conference on Mathematical Methods for Curves and Surfaces**, *Recent Insights into Computing with Positive Definite Kernels*, Tønsberg, Norway, June 2016.
3. Invited lecture at workshop **Kernel Methods in Approximation Theory and Sampling**, *Computing with Kernels*, Dortmund, Germany, March 2015.
4. **SIAM Annual Meeting**, *"Optimal" Kernel Parametrization: Numerical Analysis and Statistics*, Chicago, IL, July 2014.
5. **Midwest Numerical Analysis Day**, Milwaukee, Wisconsin, May 2014.
6. Invited lecture at **Indiana-Illinois Workshop on Scientific Computing**, *What the Hilbert–Schmidt SVD Can Do For Kernel-based Approximation Methods*, West-Lafayette, Indiana, April 2014.
7. Invited lecture at **Multivariate Approximation and Interpolation with Applications** (MAIA 2013), *Using a Hilbert–Schmidt SVD for Stable Kernel Computations*, Erice, Italy, September 2013.
8. Invited minisymposium lecture at **SIAM Annual Meeting**, *The Hilbert–Schmidt SVD: An Alternative Interpretation for the RBF-QR Method*, San Diego, CA, July 2013.
9. Invited lecture at **Midwest Numerical Analysis Day**, *Using a Hilbert–Schmidt SVD for Stable Kernel Computations*, Chicago, Illinois, May 2013.
10. Invited minisymposium lecture at **SIAM Annual Meeting**, Minneapolis, *Stable Computation with Reproducing Kernels*, July 2012.
11. **Midwest Numerical Analysis Day**, South Bend, Indiana, May 2012.
12. Invited lecture at **Freeform Optics Incubator Meeting** of the Optical Society of America, Washington, D.C., *Smooth Radial Basis Functions Viewed as a Generalization of Multivariate Polynomials*, October 2011.

13. Invited lecture at **NSF-CBMS Regional Research Conferences in the Mathematical Sciences on Radial Basis Functions: Mathematical Developments and Applications**, UMass Dartmouth, *Computing with Reproducing Kernels*, June 2011.

14. Invited minisymposium lecture at **International Symposium in Approximation Theory**, Nashville, *Stable Evaluation of Gaussian RBF Interpolants*, May 2011.

15. **CSL Teaching Enrichment Workshop**, Academic Honesty: Creating the Ethical Classroom, Illinois Institute of Technology, April 2011.

16. Invited lecture at Special Session on Numerical Analysis and Scientific Computing of **AMS Regional Meeting**, Iowa City, *Stable Evaluation of Gaussian RBF Interpolants*, March 2011.

17. Invited lecture at **NSF VIGRE Workshop on Numerical Analysis and Scientific Computing**, University of Iowa, *Positive Definite Kernels*, March 2011.

18. Festvortrag at **Kernel Functions and Meshless Methods**, Workshop honoring the 65th birthday of Robert Schaback, Göttingen, Germany, *Positive Definite Kernels: Past, Present and Future*, January 2011.

19. NSF-CBMS Regional Conference on **Recent Advances in the Numerical Approximation of Stochastic Partial Differential Equations**, Chicago, IL, August 2010.

20. **Midwest Numerical Analysis Day**, Ames, Iowa, April 2010.

21. Invited plenary lecture at **13th International Conference on Approximation Theory**, San Antonio, Texas, *Green's Functions: Taking Another Look at Kernel Approximation, Radial Basis Functions and Splines*, March 2010.

22. Invited minisymposium lecture at **Enumath 2009**, Uppsala, Sweden, *"Optimal" Scaling of Meshfree Kernel Methods*, July 2009.

23. Invited minisymposium lecture at **23rd Biennial Numerical Analysis Conference**, Glasgow, Scotland, *"Optimal" Scaling of Meshfree Kernel Methods*, June 2009.

24. **Midwest Numerical Analysis Day**, Detroit, Michigan, April 2009.

25. **3rd Workshop on High-Dimensional Approximation**, Sydney, Australia, *"Optimal" Scaling and Stable Computation of Meshfree Kernel Methods*, February 2009.

26. Invited plenary lecture at **International Conference on Multivariate Approximation**, Haus Bommerholz, Germany, *Solving Ill-Conditioned Symmetric Positive Definite Linear Systems with Riley's Algorithm*, September 2008.

27. Invited plenary lecture at **Workshop on Kernel-Based Methods in Numerical Analysis and Statistics**, Göttingen, Germany, *RBF Interpolation and Iterated Approximate MLS Approximation*, September 2008.

28. **Midwest Numerical Analysis Day**, Minneapolis, Minnesota, *On the Solution of Ill-Conditioned Symmetric Positive Definite Systems of Linear Equations with an Application to RBF Interpolation*, May 2008.

29. Invited plenary lecture at **Fourth International Workshop: Meshfree Methods for Partial Differential Equations**, Bonn, Germany, *Implicit Radial Basis Function Smoothing for Operator Newton Methods*, September 2007.

30. Invited plenary lecture at **ECCOMAS Thematic Conference on Meshless Methods**, Porto, Portugal, *Preconditioning of Radial Basis Function Interpolation Systems via Accelerated Iterated Approximate Moving Least Squares Approximation*, July 2007.

31. **7th International Conference on Computational and Mathematical Methods in Science and Engineering** and **Midwest Numerical Analysis Day**, Chicago, IL, *Algorithms and Designs for Mesh-Free Methods in High Dimensions: Where some of the Challenges Lie*, June 2007.

32. **NSF-CBMS Regional Research Conference on Numerical Methods for Nonlinear Elliptic Equations**, Iowa City, Iowa, *On Implicit Radial Basis Function Smoothing for Operator Newton Methods*, May 2007.

33. **Best Practices of Interdisciplinary Team Project Programs**, Illinois Institute of Technology, April 2007.

34. **3rd CSL Teaching Enrichment Workshop**, Illinois Institute of Technology, April 2007.

35. Invited plenary lecture at **1st Dolomites Workshop on Constructive Approximation and Applications**, Alba di Canazei, Italy, *On Choosing "Optimal" Shape Parameters for RBF Approximation*, September 2006.

36. Invited minisymposium lecture at **MCQMC 2006: 7th International Conference on Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing**, Ulm, Germany, *Algorithms and Designs for Mesh-Free Methods in High Dimensions — Progress and Open Problems*, August 2006.

37. Invited minisymposium lecture at **Sixth International Conference on Curves and Surfaces**, Avignon, France, *Scattered Data Approximation via Iterated MLS Approximation*, June 2006.

38. Invited lecture at **Radial Basis Functions and Beyond: From Meshless Methods to Kernel Learning**, Göttingen, Germany, *RBF Interpolation and Iterated MLS Approximation*, November 2005.

39. Invited lecture at **ECCOMAS Thematic Conference on Meshless Methods**, Lisbon, Portugal, *RBF Interpolation vs. Iterated MLS Approximation*, July 2005.

40. **Midwest Numerical Analysis Conference**, Iowa City, Iowa, *Meshfree Scattered Data Approximation via Residual Iteration*, May 2005.

41. Invited lecture at **27th International Conference on BEM/MRM 2005**, Orlando, Florida, *RBF Collocation Methods as Pseudospectral Methods*, March 2005.

42. Invited participation at Workshop **Geomathematik**, Oberwolfach, Germany, May 2004.

43. **Midwest Numerical Analysis Day**, Milwaukee, Wisconsion, *Radial Basis Function Collocation as Meshfree Spectral Methods*, April 2004.

44. Invited minisymposium lecture at **SIAM Conference on Geometric Design and Computing**, Seattle, Washington, *Recent Results for Moving Least Squares Approximation*, November 2003.

45. Invited lecture at **International Workshop on MeshFree Methods**, Instituto Superior Técnico, Lisbon, Portugal, *Dual Bases and Discrete Reproducing Kernel Hilbert Spaces: A Unified Framework for RBF and MLS Approximation*, July 2003.

46. Invited lecture at **15th International Conference on BETECH 2003**, Detroit, Michigan, *Approximate Moving Least Squares Approximation*, May 2003.

47. **Midwest Numerical Analysis Day**, Macomb, Illinois, *Approximate Moving Least Squares Approximation*, April 2003.

48. Invited minisymposium lecture at **WCCM V, Fifth World Congress on Computational Mechanics**, Vienna, Austria, *Approximate Moving Least-Squares Approximation for Time-Dependent PDEs*, July 2002.

49. Invited minisymposium lecture at **Fifth International Conference on Curves and Surfaces**, Saint Malo, France, *Approximate Moving Least-Squares Approximation: A Fast and Accurate Multivariate Approximation Method*, July 2002.

50. Invited contribution at **International Workshop: Meshfree Methods for Partial Differential Equations**, Bonn, Germany, *Matrix-free Representations for Moving Least-Squares Methods*, September 2001.

51. **Tenth International Conference on Approximation Theory**, St. Louis, Missouri, *Matrix-free Multilevel Moving Least-Squares Methods*, March 2001.

52. Invited contribution at **Workshop on Meshfree Methods**, Iowa City, Iowa, *Solving Nonlinear PDEs with Multilevel Newton Iteration and Radial Basis Function Collocation*, November 2000.

53. **First SIAM Conference on Computational Science and Engineering**, Washington, D.C., *A Radial Basis Function based Operator Newton Method for the Solution of Nonlinear Partial Differential Equations*, September 2000.

54. **Trends in Approximation Theory**, Nashville, Tennessee, *Nonsymmetric Multilevel RBF Collocation within an Operator Newton Framework for Nonlinear PDEs*, May 2000.

55. Invited contributed talk in special session on *Nonlinear differential equations and their applications* at **AMS Regional Meeting #954**, Lafayette, Louisiana, *Radial Basis Function Collocation: The Nonsymmetric Approach*, April 2000.

56. **Midwest Numerical Analysis and Scientific Computing Day**, Indianapolis, Indiana, *On the Solution of Nonlinear Partial Differential Equations using Nonsymmetric Radial Basis Function Collocation*, March 2000.

57. Invited contributed talk at **BETEC 99, 13th International Conference in Boundary Element Technology**, Las Vegas, Nevada, *On the Numerical Solution of Differential Equations with Radial Basis Functions*, June 1999.

58. **SIAM Midwest Regional Mathematics in Industry Workshop**, Chicago, Illinois, October 1998.

59. Invited contributed talk at **Workshop on CAGD and Wavelet Methods for Reconstructing Functions**, Montecatini, Italy, *Multilevel Collocation with Compactly Supported Radial Basis Functions*, June 1998.

60. **Midwest Numerical Analysis Day**, Macomb, Illinois, *Multilevel Approximation with Radial Basis Functions*, April 1998.

61. Invited minisymposium presentation at **9th International Conference on Approximation Theory**, Nashville, Tennessee, *Improved convergence rates for multilevel approximation through smoothing of residuals*, January 1998.

62. **IMACS Conference on Radial Basis Functions**, Asilomar, California, *Multistep Approximation Algorithms: Improved Convergence Rates through Postconditioning with Smoothing Kernels*, May 1997.

63. Invited presentation at **Numerische Methoden der Approximationstheorie**, Oberwolfach, Germany, *Multistep Approximation Algorithms: Improved Convergence Rates through Postconditioning with Smoothing Kernels*, May 1997.

64. **Third International Conference on Curves and Surfaces**, Chamonix, France, *Solving Partial Differential Equations with Radial Basis Functions*, June 1996.

65. **Workshop: Modeling and Computation for Applications in Science and Engineering**, Evanston, Illinois, *Collocation with Radial Basis Functions*, May 1996.

66. **4th SIAM Conference on Geometric Design**, Nashville, Tennessee, *Minisymposium: Scattered Data Methods*, Co-Moderation & Introductory Presentation, November 1995.

67. **SIAM 19th Annual Southeastern-Atlantic Section Meeting**, Charleston, South Carolina, *Applications of Radial Basis Functions on the Sphere*, March 1995.

68. **8th Texas International Conference on Approximation Theory**, College Station, Texas, *Hermite Interpolation with Radial Basis Functions on the Sphere*, January 1995.

69. **7th Southeast Conference in Approximation Theory**, Nashville, Tennessee, *Hermite Interpolation with Radial Basis Functions on the Sphere*, November 1994.

70. **3rd International Conference on Mathematical Methods in CAGD**, Ulvik, Norway, *Interpolation and Approximation with Radial Basis Functions on the Sphere*, June 1994.

71. **3rd SIAM Conference on Geometric Design**, Tempe, Arizona, *Multi-Patch Parametric Surfaces with Minimal Energy*, November 1993.

72. **7th Texas International Symposium on Approximation Theory**, Austin, Texas, C^1-*Blending with Bézier-Triangles*, January 1992.

Colloquia and Seminars

Baylor University (Department of Mathematics), University of California–Los Angeles (Institute of Pure and Applied Mathematics), Chapman University (School of Computational Sciences), University of Chicago (Department of Mathematics), Chicago State University (Department of Mathematics and Computer Science), Cornell University (Center for Applied Mathematics), University of Dayton (Department of Mathematics), Georgia Institute of Technology (School of Industrial and Systems Engineering), Universität Göttingen, Germany (Institut für Numerische und Angewandte Mathematik), IIT (Department of Applied Mathematics), IIT (Department of Electrical and Computer Engineering), Universität Mannheim, Germany (Department of Mathematics), University of Michigan (Department of Mathematics), Middle Tennessee State University (Department of Mathematical Sciences), University of New Mexico (Department of Mathematics and Statistics), New Mexico Institute of Mining and Technology (Department of Mathematics), Northwestern University (Department of Industrial Engineering & Management Sciences), Northwestern University (Department of Mathematics), Northwestern University (Department of Theoretical and Applied Mechanics), Oregon State University (Department of Mathematics), University of Padua, Italy (Department of Pure and Applied Mathematics), University of St. Thomas (Department of Mathematics), Universität Stuttgart, Germany (Mathematisches Institut A), Syracuse University (Department of Mathematics), Vanderbilt University (Department of Mathematics), Western Illinois University (Department of Mathematics), University of Wisconsin–Madison (Department of Statistics), University of Wisconsin–Milwaukee (Department of Mathematical Sciences).

Outreach Presentations

Carl Friedrich Gauss, Clow Elementary School, Naperville, IL, December 2005.

What Connects Your Famous Mathematicians, Clow Elementary School, Naperville, IL, May 2006.

Why should we care about trig?, Neuqua Valley High School, Naperville, IL, April 2008, March 2009.

From "Newton, Leibniz and the Boys" to the "Good Ol' Boys", Neuqua Valley High School, Naperville, IL, March 2010.

About Newton('s Apple) and Square Roots: A Talk **not** *about Mathematical Biology*, Gordon Gregory Middle School, Naperville, IL, April 2010.

Invited speech at MAΘ *Induction Ceremony*, Carl Sandburg High School, Orland Park, IL, October 2013.

"*Why Math? What makes it so interesting?*", Mathematics and Science Association, Aurora University, Aurora, IL, November 2015.

Teaching Experience

ILLINOIS INSTITUTE OF TECHNOLOGY

During the 19 years I was at IIT I taught (or co-taught) a total of 20 different courses as well as one mathematics section in IIT's EID summer program for talented minority high school students. These courses are listed in detail below. I have created websites for most of these courses which you can find at `http://math.iit.edu/~fass/index.html#Teaching`.

1. MATH 100 Introduction to the Profession (instructor or co-instructor) – 2 credit hours (Fall 06, Fall 07, Fall 08, Fall 09, Fall 10, Fall 11), 3 credits hours (Fall 12)
2. MATH 152 Calculus II – 5 credit hours (Fall 97, Spring 98, Spring 01, Fall 03)
3. MATH 161 Honors Calculus I – 5 credit hours (Fall 98)
4. MATH 162 Honors Calculus II – 5 credit hours (Spring 99, Fall 99, Fall 00)
5. MATH 251 Calculus III – 4 credit hours (Spring 02, Spring 04)
6. MATH 252 Ordinary Differential Equations – 4 credit hours (Summer 98, Summer 99, Spring 00, Fall 01)
7. MATH 331 Mathematical Methods – 3 credit hours (Spring 98)
8. MATH 333 Matrices and Complex Variables – 3 credit hours (Fall 99, Spring 00)
9. MATH 350 Introduction to Computational Mathematics – 3 credit hours (Spring 08, Spring 10, Spring 11)
10. MATH 461 Fourier Series and Boundary Value Problems – 3 credit hours (Spring 99, Fall 01, Spring 03, Fall 03 (reading course), Fall 09, Fall 11, Fall 15)
11. MATH 471 Numerical Methods – 3 credit hours (Fall 97, Fall 98)
12. MATH 472 Numerical Methods for Differential Equations (also taught as MATH 478) – 3 credit hours (Fall 05, Spring 07)
13. MATH 473 Numerical Linear Algebra (also taught as MATH 477) – 3 credit hours (Spring 02, Fall 04, Fall 06)
14. MATH 532 Linear Algebra – 3 credit hours (Fall 04, Spring 15)
15. MATH 577 Computational Mathematics I – 3 credit hours (Fall 00, Fall 02, Fall 06)
16. MATH 578 Computational Mathematics II – 3 credit hours (Spring 01, Spring 03, Spring 07)
17. MATH 590 Meshfree Methods – 3 credit hours (Spring 06, Fall 08, Fall 10, Fall 12, Fall 14)
18. MATH 593 Seminar on Multivariate Approximation – 3 credit hours (Spring 04)
19. MATH 603 Multivariate Meshfree Approximation – 3 credit hours (Fall 03)
20. IPRO 497-330: "Creating a Math and Science Fair Project Bank for Chicago Public Schools" – 3 credit hours (interprofessional projects course, Spring 07, Fall 07, Spring 08, Fall 08, Spring 09)
21. Taught the Mathematics section in IIT's EID Summer program for talented minority high school students (Summer 2000).

NORTHWESTERN UNIVERSITY

During my two years at Northwestern (which is on the quarter system) I taught the following 6 different courses:

1. MATH B 14-2 Calculus II – 4 credit hours (taught 4 times)
2. MATH B 14-3 Calculus III – 4 credit hours (taught twice)
3. MATH B 15 Calculus IV – 4 credit hours (taught once)
4. MATH C 16 Fourier Series and Boundary Value Problems – 3 credit hours (taught once)
5. MATH C 34 Linear Algebra with Applications – 3 credit hours (taught once)
6. MATH E 10 Radial Basis Functions (Seminar in Analysis) – 3 credit hours (taught once)

VANDERBIILT UNIVERSITY

During my graduate studies I had full responsibility for teaching one course each semester. I also acted as a summer school instructor twice. I taught the following 5 different courses during my 4 years in graduate school:

1. Overview of College Calculus I and II (taught once)
2. MATH 172-A Calculus I – 4 credit hours (taught twice)
3. MATH 172-B Calculus II – 4 credit hours (taught 3 times)
4. MATH 229 Ordinary Differential Equations – 3 credit hours (taught 3 times)
5. MATH 230 Linear Algebra – 3 credit hours (taught once)

I also acted as **Mentor** in the department's Graduate Teaching Program during the Spring of 1993.

MARTIN METHODIST COLLEGE

August 1993–March 1994, **Adjunct Faculty**, Mathematics

I taught two introductory Mathematics courses and College Algebra to adult students in an accelerated evening sequence.

UNIVERSITÄT STUTTGART

October 1986–June 1990, **Teaching Assistant**, Department of Mathematics

Calculus (2 $\times$ Calc I & II, 1 $\times$ Calc III) and Numerical Analysis for Electrical Engineers (2 $\times$).

GOLDEN WEST COLLEGE

February 1990–March 1990, **Volunteer Tutor**, Mathematics, German & English

Postdoctoral Mentoring

Bradley Martin (Applied Mathematics, Colorado School of Mines), Fall 2016–present.

Roberto Cavoretto (Mathematics, University of Torino, Italy), Spring 2012 and Spring 2013, while visiting IIT.

Guohui Song (Applied Mathematics, IIT), Fall 2009–Summer 2010.

Phan Tu Vu (Power Systems Engineering, Ho Chi Minh University, Vietnam), Fall 2009–July 2010, while visiting IIT.

Student Advising

Academic advisor for *all* undergraduate majors (Applied Mathematics, IIT), Fall 2005–2016.

Haocheng Bian, undergraduate research project (Applied Mathematics, IIT), May 2013–December 2013.

Casey Bylund (female), undergraduate research project (Mathematics, University of San Francisco), May 2012–July 2012.

Brian Conley (African-American), undergraduate research project (Mathematics, Chicago State University), May 2008–August 2008.

Chris Curtis, undergraduate research project (Applied Mathematics, IIT), January 2002–May 2003.

Martin Dillon, undergraduate research project (Applied Mathematics, IIT), May 2013–August 2013.

John Erickson (African-American), Ph.D. Thesis (Applied Mathematics, IIT), January 2003–July 2007.

Salvatore Ganci, Ph.D. research (University of Palermo, Italy), visiting IIT August 2012–February 2013.

Yang Gao, M.S. project (Applied Mathematics, IIT), January 2007–May 2007.

Eda Gjergo (female), undergraduate research (Applied Mathematics and Physics, IIT) January 2012–May 2012.

Matthew Gliebe, undergraduate research project (Mathematics, Northwestern University), May 2013–August 2013.

Özgül Kartal (female), M.S. thesis (Applied Mathematics, IIT), January 2010–December 2010.

Joseph Kupiec, undergraduate research project (Applied Mathematics, IIT), May 2013–August 2013.

Eugene Lamie, undergraduate research project (Applied Mathematics, IIT), June 2008–December 2009.

Barrett Leslie, undergraduate research project (Applied Mathematics, IIT), May 2011–August 2011.

Michael Machen, undergraduate research project (Applied Mathematics, IIT), May 2010–January 2011.

William Mayner, undergraduate research project (Mathematics, Brown University), May 2012–July 2012.

Michael McCourt, undergraduate research project (Applied Mathematics, IIT), January 2007–May 2007.

Jesus Miranda (Hispanic), M.S. Thesis (Computer Science, IIT), December 1999.

Jesus Miranda (Hispanic), Ph.D. Thesis (Applied Mathematics, IIT), January 2002–2004.

Michael Mongillo, undergraduate research project (Applied Mathematics, IIT), May 2009–December 2010.

Jagadeeswaran Rathinavel, Ph.D. research (Applied Mathematics, IIT), Fall 2013–Spring 2016.

John Riddle, undergraduate research project (Mathematics, Wheaton College), May 2009–July 2009.

Joshua Tate, undergraduate research project (Applied Mathematics, IIT), May 2008–December 2008.

Marjan Uddin, Ph.D. Thesis work (Applied Mathematics, Ghulam Ishaq Khan Institute, Topi, Swabi, Pakistan), visiting IIT October 2010–March 2011.

Qi Ye, Ph.D. Thesis (Applied Mathematics, IIT), January 2008–May 2012.

Guoquan Zhang, Ph.D. Thesis (Applied Mathematics, IIT), May 2003–May 2007.

Ph.D. Defense and/or Comprehensive Exam Committees

Amlan Barua (Applied Mathematics, IIT), Sebastien Beysserie (Electrical and Computer Engineering, IIT), Dariusz Blasiak (Electrical and Computer Engineering, IIT), Alan Bok (Computer Science, IIT), Roberto Cavoretto (Mathematics, University of Torino, Italy), Jorge Chávez Gómez (Civil Engineering, IIT), Baohua Chen (Applied Mathematics, IIT), Tao Chen (Applied Mathematics, IIT), Yuhan Ding (Applied Mathematics, IIT), Aijun Du (Applied Mathematics, IIT), Bruce Dunne (Electrical and Computer Engineering, IIT), Hansen Ha (Applied Mathematics, IIT), Noah Jaxon (Mechanical, Materials and Aerospace Engineering, IIT), Lan Jiang (Applied Mathematics, IIT), Sriharsha Kandala (Mechanical, Materials and Aerospace Engineering, IIT), Ismail Iyigunler (Applied Mathematics, IIT), Lluís Antoni Jiménez Rugama (Applied Mathematics, IIT), Yiou Li (Applied Mathematics, IIT), Jack Lukaszuk (Computer Science, IIT), Paritosh Mokhasi (Mechanical, Materials and Aerospace Engineering, IIT), Keith Nabb (Mathematics and Science Education, IIT), Maria-Angela Narduzzo (Mathematics, University of Padua, Italy), Ben Niu (Applied Mathematics, IIT), Tomas Ritter (Applied Mathematics, IIT), Peter Salemi (Industrial Engineering and Management Sciences, Northwestern University), Gabriele Santin (Mathematics, University of Padua, Italy), Xu Sun (Applied Mathematics, IIT), Xiaojing Tang (Computer Science, IIT), Marjan Uddin (Applied Mathematics, Ghulam Ishaq Khan Institute, Topi, Swabi, Pakistan), Frederico Vidozzi (Applied Mathematics, IIT), Sebastiano Vidozzi (Applied Mathematics, IIT), Ricardo Vinuesa (Mechanical, Materials and Aerospace Engineering, IIT), Xiaoyan Zeng (Applied Mathematics, IIT), Jin Zhang (Biomedical Engineering, IIT), Zengyu Zhang (Applied Mathematics, IIT), Zhao Zhang (Applied Mathematics, IIT), Alex Zharov (Physics, IIT), Xuan Zhou (Applied Mathematics, IIT).

Service

ILLINOIS INSTITUTE OF TECHNOLOGY

UNIVERSITY-WIDE

Member of **Task Force on 4+1 and 3+2 BS/MS Programs**, 2009–2011.

Member of **Academic Unit Committee on Promotion and Tenure** (AUCOPT) for the Department of Mathematics and Science Education, 2009–2010.

Member of **University Undergraduate Studies Committee**, 2005–2013.

Chair of **University Undergraduate Studies Committee**, 2008–2009.

Member of **University Committee on Promotion and Tenure (UCOPT)**, 2006–2008.

Member of **Campus Committee on Promotion and Tenure (CAMCOPT)**, 2012, 2014, 2015.

Member of **University Academic Standings Committee**, 2007–2009.

Member of **Graduate Program Evaluation Committee for the Biomedical Engineering Department**, 2004–2005.

Member of **University Scheduling Template Committee**, 2003–2004, 2005.

Member of **Campus Connections Program**, 2002–2003.

Member of **Information Technology Advisory Council**, 2001–2003.

Member of **University Graduate Studies Committee**, 2000–2005.

Member of **Task Force on High Performance Computing**, 2000–2003.

Member of advisory board for **Academic Resource Center**, 2000–2006.

Member of **Communications Across the Curriculum** advisory committee, 1999–2002.

Member of **IPRO of IPROs** advisory committee, 1998–2000.

COLLEGE-LEVEL

College of Science Admission Committee, 2014–2015.

Dean's Committee to plan STEM Center, 2012–2013.

College of Science and Letters Undergraduate Admissions Committee, 2010–2011.

College of Science and Letters Undergraduate Studies Committee, 2010

DEPARTMENTAL

In charge of **2006 NCA Accreditation** (including curriculum and syllabus revisions for **all** AM undergraduate courses).

Chair of **Academic Unit Committee on Promotion and Tenure (AUCOPT)**, 2010, 2012, 2015.

Chair of **Academic Unit Committee on Appointments and Retention (AUCAR)**, 2006–2010, 2013.

Chair of **Undergraduate Studies Committee**, 2005–2016.

Member of **Applied Mathematics Chair Search Committee**, 1998/99, 2003/04.

Member of **Applied Mathematics Faculty Search Committee**, 1997/98, 1998/99, 1999/2000, 2000/01, 2002/03, 2005/06, 2006/07, 2010/11.

Member of **Academic Unit Committee on Appointments and Retention (AUCAR)**, 2012, 2015.

Member of **Graduate Studies Committee**, 2000–2005.

Member of **committee to develop undergraduate degree program in applied mathematics**, 1999–2000.

Member of **committee to develop graduate course sequences in computational mathematics and applied analysis**, 1999–2000.

Web administrator, 1998–2005.

- I designed and maintained all of the departmental web pages.
- I also compiled a comprehensive web page honoring Karl Menger, a former IIT mathematics professor, including biography and complete bibliography, (see `http://www.iit.edu/csl/am/about/menger/about.shtml`).

TO THE PROFESSION

Editorial Responsibilities (see above)

Conference Organization (see above)

Grant proposal review for

American Chemical Society, Engineering and Physical Sciences Research Council (UK), Foundation for Research, Science and Technology (NZ), Hong Kong Baptist University General Research Fund, National Science Foundation, National Research Council, University of Padua (Italy), UW-Milwaukee Research Growth Initiative.

External Tenure and Promotion Reviews (12 times)

Reviewed papers for

Advanced Optical Technologies, Advances in Computational Mathematics, Advances in Constructive Approximation, Algorithms for Approximation V, American Institute of Aeronautics and Astronautics (AIAA) Journal, Analysis and Applications, Applied and Computational Harmonic Analysis Applied Mathematics Letters, Applied Numerical Mathematics, Approximation Theory X, Boundary Element Technology XIII, Calcolo, Communications in Pure and Applied Analysis, Computational Mechanics, Computer Aided Geometric Design, Computer Methods in Applied Mechanics and Engineering, Computers Mathematics and Applications, Constructive Approximation, Dolomites Research Notes on Approximation, ECCOMAS Thematic Conference on Meshless Methods, Fifth AFA-SMAI Conference on Curves and Surfaces, Graphical Models and Image Processing, IEEE Transactions on Neural Networks, IMA Journal of Numerical Analysis, International Conference of Numerical Analysis and Applied Mathematics 2014, International Journal for Numerical Methods in Engineering, International Journal of Computational Methods, Ja'en Journal on Approximations, Journal of Approximation Theory, Journal of Complexity, Journal of Computational and Applied Mathematics, Journal of Computational Finance, Journal of Computational Mathematics, Journal of Computational Physics, Journal of Computational Science, Journal of Engineering Analysis with Boundary Elements, Journal of Computation and Mathematics of the London Mathematical Society, Journal of Mathematical Analysis and Applications, Mathematical and Computer Modelling, Mathematical Modelling and Analysis, Mathematical Reviews, Mathematics of Computation, MFS 2007, Neurocomputing, Numerical Algorithms, Numerical Functional Analysis & Optimization, Numerical Methods for Partial Differential Equations, Proceedings of the American Mathematical Society, Proceedings A of the Royal Society, Second ECCOMAS Thematic Conference on Meshless Methods, Seventh AFA-SMAI Conference on Curves and Surfaces, SIAM Journal of Math. Analysis, SIAM Journal of Scientific Computing, SIAM Journal on Numerical Analysis, SIAM/ASA Journal on Uncertainty Quantification, Structural Engineering and Mechanics, Trends in Approximation Theory.

Textbook/Monograph review for

Cambridge University Press, numerical analysis.

Oxford University Press, fractals and dynamical systems.

Pearson, Addison Wesley, numerical analysis.

W. H. Freeman & Co., calculus.

Springer Verlag, numerical analysis, approximation theory.

John Wiley & Sons, numerical analysis (3 times).

OTHER

Judge at Intel **International Science and Engineering Fairs**, 2010–2012.

Judge at several CPS and IPSD **Science Fairs**, 2007–2016.

Organized the first departmental student research poster competition, Spring 2007.

Co-Advisor to **IIT Math Club**, 2003–2004.

Advisor to **IIT Soccer Club**, 1999–2003.

Judge, **IPRO Day**, Fall 1999.