Curriculum Vitae

Jack Xin

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Education:

9/86 – 8/90	Courant Institute, New York University. Ph.D in Mathematics (10/90). Advisor: G. Papanicolaou. M.S. in Mathematics (6/88).
9/81 – 8/85	Peking University. B.S. in Mathematics (8/85).

Research:

Analysis and Computational Methods with Applications in Physical/Data Sciences.

Employment:

6/2025 –	Distinguished Professor, University of California, Irvine.
6/19 –6/25	Chancellor's Professor, University of California, Irvine.
8/05 –5/19	Professor of Mathematics, University of California, Irvine.
9/99 –8/05	Professor of Mathematics, University of Texas, Austin.
9/97 –8/99	Associate Professor of Mathematics, University of Arizona.
9/91 –5/97	Assistant Professor of Mathematics, University of Arizona.
9/91 –8/92	Postdoctoral Fellow at the Institute for Advanced Study, Princeton.
9/90 –8/91	Postdoctoral Fellow at the Math Sciences Research Inst, Berkeley.

Honors, Awards and Recognition:

6/2025	Qualcomm Gift Award.
5/2025	Member of the National Academy of Artificial Intelligence (NAAI).
5/2025	NAAI Distinguished Artificial Intelligence Scholar Award.
5/2025	NAAI Distinguished Speaker Award.
7/2024	Fellow of the Asia-Pacific Artificial Intelligence Association.
7/2024	Qualcomm Gift Award.
3/2023	Qualcomm Gift Award.
9/22-11/22	Visiting Chancellor's Professor, Courant Institute, NYU.

3/2022	Qualcomm Faculty Award.
3/2021	Fellow of the Society for Industrial and Applied Mathematics.
12/2020	Qualcomm Faculty Award.
11/2020	Fellow of the American Association for the Advancement of Science.
3/2020	Qualcomm Faculty Award.
2/2019	Qualcomm Faculty Award.
3/2018	Distinguished Speaker, UT Dallas and Southern Methodist Univ.
2/2015 –2/2019	Elected Member-at-Large, Math Section, American Association for the Advancement of Science.
9/2012	Qualcomm Research Gift Award.
9/2012	Inaugural Fellow of the American Mathematical Society.
2/2010	Distinguished Speaker, Pacific Institute for the Mathematical Sciences (PIMS), British Columbia, Canada.
10/2005	Hour Address Speaker, American Mathematical Society.
9/03-12/03	Visiting Professor, CalTech Applied Math and CIMMS.
9/2003	Visiting Professor, Johns Hopkins Univ, Applied Math and Statistics.
5/2003	Fellow of the John Simon Guggenheim Memorial Foundation.
12/2002	Faculty Research Assignment Award, University of Texas.
10/2002	Visiting Professor, Institute de Henri Poincaré, France.
4/2002	Selected as highly cited author in mathematics by ISI's Essential Science Indicators (ESI), http://esi-topics.com/fbp/fbp-april2002.html.
6/2000	Distinguished Foreign Visiting Fellow, Multi-Media Laboratory, Hokkaido University, Japan.
5/1998-7/1998	Visiting Professor, UCLA.
4/1998	Visiting Professor, Math Institute, Stuttgart University, Germany.
3/1998	Visiting Professor, E. Schrödinger Institute (ESI), Austria.
1/1998-2/1998	Visiting Professor, Courant Institute, NYU.
8/1994 -12/1994	NFR Research Fellow, Swedish Natural Science Research Council, Institut Mittag-Leffler, Sweden.
4/1991	Kurt O. Friedrichs Prize, Courant Institute, New York University.

Administrative Experience:

1/14–12/19	Editor-in-Chief, SIAM Journal Multiscale Modeling and Simulation.

9/2009–8/2015 Director of iCAMP (Interdisciplinary Computational and Applied Mathematics Program), UC Irvine.

6/2007–5/2009 Vice-Chair for Undergraduate Studies, Math Department, UC Irvine.

Grants:

7/23 – 7/27 NSF Grant DMS-2309520, (PI: *Deep Particle Algorithms and Advection-Reaction-Diffusion Transport Problems*).

9/23 – 9/26 NSF Grant DMS-2219904, (PI: *Collaborative Research: ATD: Fast Algorithms and Novel Continuous-depth Graph Neural Network Architectures for Threat Detection*).

9/22 – 8/25 NSF Grant DMS-2151235, (PI: *CDS&E-MSS: Computational and Mathematical Studies of Compression and Distillation Methods for Deep Neural Networks and Applications*).

8/20 – 7/23 NSF Grant DMS-1952644, (PI: *FRG: Collaborative Research: Robust, Efficient, and Private Deep Learning Algorithms*).

7/19 – 6/22 NSF Grant ATD-1924548, (PI: *ATD: Collaborative Research: Robust, Accurate and Efficient Graph-Structured RNN for Spatio-Temporal Forecasting and Anomaly Detection*).

7/19 – 6/22 NSF Grant DMS-1854434, (PI: *CDS&E-MSS: Computational and Mathematical Studies of Complexity Reduction Methods for Deep Neural Networks and Applications*).

9/16 – 8/20 NSF Grant IIS-1632935, (PI: *BIGDATA: Collaborative Research: F: Foundations of Non-convex Problems in BigData Science and Engineering: Models, Algorithms, and Analysis*).

9/15 – 8/18 NSF Grant DMS-1522383, (PI: *Theory and Algorithms of Transformed L1 Minimization with Applications in Data Science*).

7/12 – 6/17 NSF Grant DMS-1211179, (PI: *Reaction-Diffusion Front Speeds in Chaotic and Stochastic Flows*).

9/12 – 8/16 NSF-ATD Grant DMS-1222507, (PI: *Blind and Template Assisted Source Separation Algorithms with Applications to Spectroscopic Data*).

5/11 – 10/13 Office of Naval Research Grant N000014-11-1-060, (co-PI: *Image Fusion via Batch Registration from Linear Measurements*, PI: H-K Zhao).

9/09 – 8/14 NSF-PRISM Grant DMS-0928427. (PI: *UCI Interdisciplinary Computational and Applied Mathematics Program*, co-PIs: S. Eichhorn, A. Ihler, M. Welling, H-K Zhao).

9/09 – 6/13 NSF-ATD Grant DMS-0911277. (PI: *Sparse Blind Separation Algorithms of Spectral Mixtures and Applications*).

7/07 – 6/10 NSF AMC-SS Grant DMS-0712881. (PI: *Dynamic Algorithms for Blind Source Separation of Convolutive Sound Mixtures*).

7/06 – 6/07 CORCLR Multi-Investigator Faculty Research Award, Academic Senate, UCI; co-PI F-G Zeng, project title: *Dynamic Signal Processing to Improve Hearing Aid Performance.*

7/05 – 6/08 National Science Foundation Grant, DMS-0549215 (PI: *A Variational Principle Based Study of Random Front Speeds*).

9/02 – 8/06 NSF-ITR (Information Technology Research) Grant, ITR-0219004 (PI: *PDE Based Algorithms for Processing Multi-scale Audio Signals*).

6/03 – 5/04 NSF-SCREMS Grant, DMS-0322962 (PI: *Computational Mathematical Research at UTM*).

9/02 – 5/03 Army Research Office Grant, DAAD19-02-1-0172 (PI: *International Conference on Random Phenomena in Applied Mathematics*).

10/00 – 9/02 Army Research Office Grant, DAAD19-00-1-0524 (PI: *Mathematical Models of Phoneme Recognition Based on Human Auditory Systems*).

6/99 – 9/00 Army Research Office Grant, DAAD19-99-1-0248 (PI: *Mathematical Models of Phoneme Recognition Based on Human Auditory Systems*).

6/96 – 5/99 NSF Grant, DMS-9625680 (PI: *Analysis of Patterns and Dynamics of Nonlinear Dissipative Systems*).

6/93 – 5/96 NSF Grant, DMS-9302830 (PI: *Theory and Applications of Wave Front Propagation in Inhomogeneous Media*).

Peer Reviewed Journal Publications

1. Xin, J., *Existence and Stability of Travelling Waves in Periodic Media Governed by a Bistable Nonlinearity.* Journal of Dynamics and Differential Equations, Vol. 3, No. 4, 1991, pp 541-573.

2. Papanicolaou, G., Xin, J., *Reaction-Diffusion Fronts in Periodically Layered Media.* J. Stat. Physics, Vol. 63, Nos. 5/6, 1991, pp 915-931.

3. Xin, J., *Existence and Uniqueness of Travelling Wave Solutions in a Reaction-Diffusion Equation with Combustion Nonlinearity.* Indiana Univ. Math. Journal, Vol. 40, No. 3, 1991, pp 985-1008.

4. Hou, T.Y., Xin, J., *Homogenization of Linear Transport Equations with Oscillatory Vector Field.* SIAM J. Appl. Math., Vol. 52, No. 1, pp 34-45, 1992.

5. Xin, J., *Multidimensional Stability of Traveling Waves in a Bistable Reaction-Diffusion Equation, I,* Comm. in PDE, Vol. 17(1992), pp 1889-1899.

6. Levermore, C. D., Xin, J., *Multidimensional Stability of Traveling Waves in a Bistable Reaction-Diffusion Equation, II,* Comm. PDE, Vol. 17(1992), pp 1901-1924.

7. Xin, J., *Existence of Planar Flame Fronts in Convective-Diffusive Periodic Media.* Arch. Rat. Mech. and Anal., 121(1992), pp 205-233.

8. Xin, J., Peirce, A., Chadam, J., Ortoleva, P., *Reactive Flows in Layered Porous Media II. The Shape Stability of the Reaction Interface.* SIAM Journal of Applied Math., 53/2 (April 1993), p. 319-339.

9. Xin, J., *Existence of a Class of Symmetric Spiral Waves on Finite Disc Domains of Excitable Media.* Indiana U. Math Journal, Vol. 42, No. 2, Winter 1993, pp 1305-1337.

10. Xin, J., *Existence and nonexistence of traveling waves and reaction-diffusion front propagation in periodic media.* J. of Stat. Phys., 73(1993), pp 893-926.

11. Xin, J., *Existence of Multidimensional Traveling Waves in Transport of Reactive Solutes through Periodic Porous Media*, Archive for Rational Mech. and Analysis, 128(1994), pp 75-103.

12. J. Xin, J. Zhu, *Quenching and Propagation of Bistable Reaction-Diffusion Fronts in Multidimensional Periodic Media*, Physica D 81(1995), pp 94-110.

13. L. Berlyand and J. Xin, *Large Time Asymptotics of Solutions of a Model Combustion System with Critical Nonlinearity*, Nonlinearity 8(1995), pp 161-178.

14. J. Xin, A. Peirce, J. Chadam, P. Ortoleva, *Reactive flows in layered porous media, I. Homogenization of free boundary problems*, Asymptotic Analysis 11(1995), pp 31-54.

15. J. Bricmont, A. Kupiainen, J. Xin, *Global Large Time Self-similarity of a Thermal-Diffusive Combustion System with Critical Nonlinearity*, Journal of Differential Equation, Vol. 130, No. 1, pp 9-35, 1996.

16. J. Xin, J. Moloney, *Global Weak Solutions and Attractors of the Three Dimensional Maxwell-Bloch Two Level Laser Systems*, Comm. Math. Phys. 179, 511-528 (1996).

17. M. Weinstein, J. Xin, *Dynamic Stability of the Vortex Solutions of the Ginzburg-Landau and the Nonlinear Schrödinger Equations*, Comm. Math. Phys. 180, 389-428 (1996).

18. J. Wehr, J. Xin, *White Noise Perturbation of Viscous Shock Fronts of the Burgers Equations*, Comm. Math. Phys, 181, pp 183-203, 1996.

19. P. Collet, J. Xin, *Global Existence and Large Time Asymptotic Bounds of L^∞ Solutions of Thermal Diffusive Combustion Systems on R^n*, Ann. Scuola Norm. Sup. Pisa, Serie IV, Vol. XXIII, Fasc. 4(1996).

20. J. Xin, *Stability of Traveling Waves in a Solute Transport Equation,* J. Diff. Equation, Vol. 135, No. 2, pp 269-298, 1996.

21. G. Eyink, J. Xin, *Dissipation-Independence of the Inertial-Convective Range in a Passive Scalar Model,* Phys. Rev. Letter, Vol. 77, No. 13, pp 2674-2677, 1996.

22. J. Wehr, J. Xin, *Front Speed in the Burgers Equation with a Random Flux,* J. Stat. Phys., 88(1997), Nos. 3/4, pp 843-871.

23. M. Postel, J. Xin, *A Numerical Study of Fronts in Random Media using a Solute Transport Model,* Computational Geosciences 1(1997), pp 251-270.

24. G. Fennemore, J. Xin, *Wetting Fronts in One Dimensional Periodically Layered Soils*, SIAM J. Appl. Math, Vol. 58, no. 2, pp. 387-427, 1998.

25. S. Malham, J. Xin, *Global Solutions to a Reactive Boussinesq System with Front Data on an Infinite Domain*, Comm. Math. Phys., Vol. 193(2), pp 287-316, 1998.

26. J. Xin, J. Moloney, *Global solutions and attractors of a Maxwell-Bloch Raman laser system in two transverse dimensions,* Nonlinearity 11 (1998), pp 501-527.

27. J. Xin, D. Zhang, *Statistical analysis of biodegradation fronts in one-dimensional heterogeneous porous media*, Advances in Water Resources, vol. 22, no. 2, pp 103-116, 1998.

28. F-H Lin, J. Xin, *A Unified Approach to Vortex Motion Laws of Complex Scalar Field Equations*, Math Research Letters, 5(1998), no. 4, pp 1-6.

29. R. Murray, J. Xin, *Existence of Traveling Waves in a Biodegradation System for Organic Contaminants*, SIAM J. Math. Analysis, 1998, Vol 30, No. 1, pp 72-94.

30. F-H Lin, J. Xin, *On the Incompressible Fluid Limit and the Vortex Motion Law of the Nonlinear Schrödinger Equation*, Comm. Math. Phys., 200, pp 249-274, 1999.

31. F-H Lin, J. Xin, *On the Dynamical Law of the Ginzburg-Landau Vortices on the Plane*, Comm. Pure Appl. Math., 52(1999), no. 10, pp. 1189-1212.

32. J. Xin, *Modeling Light Bullets with the Two Dimensional Sine-Gordon Equation,* Physica D, Vol. 135, No. 3 & 4(2000), pp 345-368.

33. J. Xin, J. M. Hyman, *Stability, Relaxation and Oscillation of Biodegradation Fronts,* SIAM Journal Applied Math, 61:(2) 472-505, 2000.

34. J. Xin, *Front Propagation in Heterogeneous Media,* SIAM Review, Vol. 42, No. 2, June 2000, pp 161-230. Selected as ISI fast breaking paper in math, http://esi-topics.com/fbp/fbp-april2002.html, lists highly cited papers in 22 broad fields of science. These papers comprise the top 1 % of papers in each field and each year from 1991 through 2001.

35. G. Eyink, J. Xin, *Self-similar Decay in the Kraichnan Model of a Passive Scalar*, J. Stat Physics, Vol. 100, Issue 3/4, August, 2000.

36. Y-Y Qi, J. Xin, *A Perception and PDE Based Nonlinear Transformation for Processing Spoken Words*, Physica D, 149 (2001),143-160.

37. S. Ruuth, B. Merriman, J. Xin, S. Osher, *A Diffusion-Generated Approach to the Curvature Motion of Filaments*, Journal of Nonlinear Science, 11 (2001), no. 6, 473–493.

38. G. Eyink, J. Xin, *Statistical Analysis of a Semilinear Hyperbolic System with White Noise in Time Random Advection*, Nonlinearity, Vol 15, No.3, May 2002, pp 551-565.

39. G. Mercado, B. Luce, J. Xin, *Modeling Thermal Front Dynamics in Microwave Heating*, IMA Journal of Applied Math, 67, no. 5, pp 419-439, 2002.

40. J. Xin, Y-Y Qi, L. Deng, *Time Domain Computation of a Nonlinear Nonlocal Cochlear Model with Applications to Multitone Interaction in Hearing,* Communications in Math Sciences, Vol. 1, No. 2, pp. 211-227, 2003.

41. J. Xin, *Self-Similarity in Deterministic and Stochastic Dissipative Systems*, Bulletin of the Institute of Mathematics, Academia Sinica, Vol. 31, no. 2, June, 2003.

42. M. D. LaMar, Y-Y Qi, J. Xin, *Modeling Vocal Fold Motion with a Hydrodynamic Semi-Continuum Model,* Journal of the Acoustical Society of America, Vol. 114, No. 1, pp 455-464, 2003.

43. J. Xin, *KPP Front Speeds in Random Shears and the Parabolic Anderson Problem*, Methods and Applications of Analysis, Vol. 10 (2003), No. 2, pp 191-198.

44. J. Nolen, J. Xin, *Reaction-diffusion front speeds in spatially-temporally periodic shear flows*, SIAM J. Multiscale Modeling and Simulation, Vol. 1, No. 4, pp. 554-570, 2003.

45. J. Xin, Y-Y Qi, *A PDE based two level model of the masking property of the human ear*, Communications in Math Sciences, Vol. 1, No. 4, 2003, pp 833-840.

46. J. Xin, Y-Y Qi, *Global well-posedness and multi-tone solutions of a class of nonlinear nonlocal cochlear models in hearing*, Nonlinearity, Vol. 17 (2004), No. 2, pp 711-728.

47. J. Xin, *Dispersive instability and its minimization in time domain computation of steady state responses of cochlear models*, Journal of the Acoustical Soc. America, 115 (5), 2004, Pt. 1, pp 2173-2177.

48. J. Nolen, J. Xin, *A Variational Principle Based Computation of KPP Average Front Speeds in Random Shear Flows*, Methods and Applications of Analysis, Vol. 11, No. 3, pp 389 - 398, Sept, 2004.

49. J. Nolen, J. Xin, *Min-Max Variational Principle and Front Speeds in Random Shear Flows*, Methods and Applications of Analysis, Vol. 11, No. 4, pp 635-644, Dec, 2004.

50. T. Povich, J. Xin, *A numerical study of light bullets interaction in the (2+1) sine-Gordon equation*, Journal of Nonlinear Science, 2005, Vol. 15, pp 11-25.

51. J. Xin, Y-Y Qi, *An Invertible Discrete Auditory Transform*, Communications in Math Sciences, Vol. 3, No. 1, pp 745-754, 2005.

52. J. Nolen, J. Xin, *Existence of KPP Type Fronts in Space-Time Periodic Shear Flows and a Study of Minimal Speeds Based on Variational Principle,* Discrete and Continuous Dynamical Systems, 2005, Vol. 13, No. 5, pp 1217-1234.

53. Y. Kim, J. Xin, *A two-dimensional nonlinear nonlocal feed-forward cochlear model and time domain computation of multitone interactions*, SIAM J. Multiscale Modeling and Simulation, Vol. 4, No. 2, pp 664-690, 2005.

54. J. Nolen, J. Xin, *A Variational Principle Based Study of KPP Minimal Front Speeds in Random Shears*, Nonlinearity 18 (2005), pp 1655 - 1675.

55. J. Xin, Y-Y Qi, *An Orthogonal Discrete Auditory Transform*, Communications in Math Sciences, Vol. 3, No. 1, pp 251-259, 2005.

56. J. Nolen, M. Rudd, J. Xin, *Existence of KPP fronts in spatially-temporally periodic advection and variational principle for propagation speeds*, Dynamics of PDE, Vol. 2, No. 1, pp 1-24, 2005.

57. M.D. LaMar, J. Xin, Y-Y Qi, *Signal processing of acoustic signals in the time domain with an active nonlinear nonlocal cochlear model*, Signal Processing, 86(2006), pp 360-374.

58. J. Wehr, J. Xin, *Scaling Limits of Waves in Convex Scalar Conservation Laws under Random Initial Perturbations*, J. Stat. Physics, Vol. 122, No. 2, pp 361 – 370, 2006.

59. Y-S Kim, J. Xin, Y-Y Qi, *A Study of Hearing Aid Gain Functions Based on a Nonlinear Nonlocal Feedforward Cochlear Model*, Hearing Research, Volume 215, Issues 1-2, May 2006, pp 84-96.

60. J. Nolen, J. Xin, *A Variational Principle of KPP Front Speeds in Temporally Random Shear Flows*, Communications in Mathematical Physics, V. 269, No. 2, pp 493-532, 2007.

61. J. Liu, J. Xin, Y-Y Qi *A Dynamic Algorithm for Blind Separation of Convolutive Sound Mixtures*, Neurocomputing, V. 7, No. 2, 109-128, 2008.

62. W. E, J. Wehr, J. Xin, *Breakdown of Homogenization of Random Hamilton-Jacobi Equations,* Comm. Math Sci, Vol 6, No. 1, pp 189-197, 2008.

63. J. Nolen, J. Xin, *Variational Principle and Computation of Reactive Front Speeds in Random Flows*, Physica D, 237(2008), pp 3172-3177.

64. L. Shen, J. Xin, A. Zhou, *Finite Element Computation of KPP Front Speeds in Random Shear Flows in Cylinders*, SIAM J. Multiscale Modeling and Simulation, Vol. 7, Issue 3, pp. 1029-1041, 2008.

65. J. Nolen, J. Xin, *KPP Fronts in One Dimensional Random Drift*, Discrete and Continuous Dynamical Systems-B, Vol. 11, No. 2, pp 421-442, 2009.

66. J. Nolen, J. Xin, *Asymptotic Spreading of KPP Reactive Fronts in Incompressible Space-Time Random Flows*, Ann Inst. H. Poincaré, Analyse Non Lineaire, Vol. 26, Issue 3, May-June 2009, pp 815-839.

67. J. Liu, J. Xin, Y-Y Qi, F-G. Zeng, *A Time Domain Algorithm for Blind Separation of Convolutive Sound Mixtures and L-1 Constrained Minimization of Cross Correlations*, Comm. Math Sci, Vol. 7, No. 1, 2009, pp 109-128.

68. J. Liu, J. Xin, Y-Y Qi, *A Soft-Constrained Dynamic Iterative Method for Blind Source Separation*, SIAM J. Multiscale Modeling and Simulation, Volume 7, Issue 4, pp. 1795-1810, 2009.

69. J. Liu, J. Xin, Y-Y Qi, *A Time Domain Algorithm for Blind Separation of Convolutive Sound Mixtures Based on IIR Models*, Journal of Computational Mathematics, Vol. 28, No. 3, pp 371-385, 2010.

70. J. Nolen, J. Xin, Y. Yu, *Bounds on front speeds for the inviscid and viscous G-equations*, Methods and Applications of Analysis, 16(4), pp. 507–520, 2009.

71. J. Xin, Y. Yu, *Periodic Homogenization of Inviscid G-equations for Incompressible Flows*, Comm. Math. Sci, 8(4), pp 1067–1078, 2010.

72. Y. Liu, J. Xin, Y. Yu, *Periodic Homogenization of G-equations and Viscosity Effects*, Nonlinerity, 23, pp. 2351–2367, 2010.

73. L. Wang, J. Xin, Q. Nie, *A Critical Quantity for Noise Attenuation in Feedback Systems,* PLoS Computational Biology, 6(4), 2010, e1000764.

74. W. Bao, X. Dong, J. Xin, *Comparisons between sine-Gordon and perturbed nonlinear Schrödinger equations for modeling light bullets beyond critical collapse*, Physica D, 239(13), pp. 1120–1134, 2010.

75. M. Yu, J. Xin, *Stochastic Approximation and a Nonlocally Weighted Soft-Constrained Recursive Algorithm for Blind Separation of Reverberant Speech Mixtures*, Discrete and Continuous Dynamical Systems, 28(4), 2010, pp. 1753–1767.

76. Y. Liu, J. Xin, Y. Yu, *Asymptotics for turbulent flame speeds of the viscous G-equation enhanced by cellular and shear flows*, Archive for Rational Mechanics and Analysis, 199(2), (2011), pp. 527–561.

77. Y. Sun, C.D. Ridge, F. del Rio-Portilla, A.J. Shaka, J. Xin, *Postprocessing and sparse blind source separation of positive and partially overlapped data*, Signal Processing, 91(8), pp. 1838–1851, 2011.

78. Y. Sun, J. Xin, *Under-determined Sparse Blind Source Separation of Nonnegative and Partially Overlapped Data*, SIAM J. Scientific Computing, 33(4), pp. 2063–2094, 2011.

79. W. Ma, M. Yu, J. Xin, S. Osher, *A Convex Model and L1 Minimization for Musical Noise Reduction in Blind Source Separation*, Comm Math Sciences, 10(1), 2012, pp. 223–238.

80. E. Esser, M. Möller, S. Osher, G. Sapiro, J. Xin, *A Convex Model for Nonnegative Matrix Factorization and Dimensionality Reduction on Physical Space*, IEEE Transactions on Image Processing, 21(7), 2012, pp. 3239–3252.

81. M. Yu, W. Ma, J. Xin, S. Osher, *Multi-Channel L1 Regularized Convex Speech Enhancement Model and Fast Computation by the Split Bregman Method*, IEEE Transactions on Audio, Speech and Language Processing, 20(2), 2012, pp. 661-675.

82. Q. He, J. Xin, *Hybrid Deterministic-Stochastic Gradient Langevin Dynamics for Bayesian Learning*, Communications in Information and Systems, Vol. 12, No. 3, pp. 221-232, 2012.

83. Y. Sun, J. Xin, *A Recursive Sparse Blind Source Separation Method and its Application to Correlated Data in NMR Spectroscopy of Biofluids*, J. Sci. Computing, 51(3), 2012, pp. 733–753.

84. Q. He, J. Xin, *Convergence Analysis of a Randomly Perturbed Infomax Algorithm for Blind Source Separation*, Communications in Information and Systems, 12(4), pp. 251–275, 2012.

85. Y. Sun, J. Xin, *Nonnegative Sparse Blind Source Separation for NMR Spectroscopy by Data Clustering, Model Reduction, and L1 Minimization*, SIAM J. Imaging Science, 5(3), 2012, pp. 886-911.

86. L. Shen, J. Xin, A. Zhou, *Finite Element Computation of KPP Front Speeds in Cellular and Cat's Eye Flows*, Journal of Scientific Computing, 55(2), 2013, pp. 455–470.

87. Y. Liu, J. Xin, Y. Yu, *A Numerical Study of Turbulent Flame Speeds of Curvature and Strain G-equations in Cellular Flows*, doi:10.1016/j.physd.2012.09.008; Physica D 243(1), pp. 20-31, 2013.

88. L. Shen, J. Xin, A. Zhou, *Finite Element Computation of KPP Front Speeds in 3D Cellular and ABC Flows*, Math Model. Natural Phenomena, 8(3), 2013, pp. 182-197.

89. Y. Liu, J. Xin, Y. Yu, *Turbulent Flame Speeds of G-equation Models in Unsteady Cellular Flows*, Math Model. Natural Phenomena, 8(3), pp. 198-205, 2013.

90. J. Xin, Y. Yu, *Sharp asymptotic growth laws of turbulent flame speeds in cellular flows by inviscid Hamilton-Jacobi models*, Annales de l'Institut Henri Poincaré, Analyse Nonlineaire, 30(6), pp. 1049–1068, 2013. (Most downloadable paper, first accessed 2/2019).

91. E. Esser, Y. Lou, J. Xin, *A Method for Finding Structured Sparse Solutions to Non-negative Least Squares Problems with Applications*, SIAM Journal on Imaging Sciences, 6(4), pp. 2010–2046, 2013.

92. Y. Sun, J. Xin, *A Sparse Semi-Blind Source Identification Method and Its Application to Raman Spectroscopy for Explosives Detection*, Signal Processing, 96, 2014, pp. 332-345.

93. Y. Sun, L.M. Wingen, B.J. Finlayson-Pitts, J. Xin, *A Semi-Blind Source Separation Method for Differential Optical Absorption Spectroscopy of Atmospheric Gas Mixtures*, Inverse Problems and Imaging, 8(2), 2014, pp. 587-610.

94. Y. Lou, E. Esser, H.K. Zhao, J. Xin, *Partially Blind Deblurring of Barcode from Out-of-Focus Blur*, SIAM Journal on Imaging Sciences, 7(2), 2014, 740-760.

95. J. Xin, Y. Yu, *Front Quenching in G-equation Model Induced by Straining of Cellular Flow*, Arch. Rational Mech. Analysis, vol. 214, pp. 1-34, 2014 (ICCM distinguished paper award, Sun Yat-sen University, Dec 27, 2017).

96. J. Xin, Y. Yu, *Asymptotic growth rates and strong bending of turbulent flame speeds of G-equation in steady two dimensional incompressible periodic flows*, SIAM J. Math Analysis, 46(4), pp. 2444-2467, 2014.

97. P. Yin, E. Esser, J. Xin, *Ratio and Difference of L1 and L2 Norms and Sparse Representation with Coherent Dictionaries*, Communications in Information and Systems, 14(2), 2014, pp. 87–109.

98. P. Yin, J. Xin, *PhaseLiftOff: an Accurate and Stable Phase Retrieval Method Based on Difference of Trace and Frobenius Norms*, Comm. Math Sciences, 13(4), pp. 1033-1049, 2015.

99. Y. Lou, P. Yin, Q. He, J. Xin, *Computing Sparse Representation in a Highly Coherent Dictionary Based on Difference of L1 and L2*, J. Scientific Computing, 64(1), pp. 178-196, 2015.

100. P. Yin, Y. Lou, Q. He, J. Xin, *Minimization of l_{1-2} for compressed sensing*, SIAM J. Sci. Computing, 37(1), pp. A536-A563, 2015.

101. Y. Lou, T. Zeng, S. Osher, J. Xin, *A Weighted Difference of Anisotropic and Isotropic Total Variation Model for Image Processing*, SIAM J. Imaging Sci, 8(3), pp. 1798-1823, 2015.

102. X. Shi, F. Park, L. Wang, J. Xin, Y-Y. Qi, *Parallelization of a Color-Entropy Preprocessed Chan-Vese Model for Face Contour Detection on Multi-core CPU and GPU*, Parallel Computing, 49(2015), pp. 28-49.

103. P. Zu, L. Chen, J. Xin, *A Computational Study of Residual KPP Front Speeds in Time-Periodic Cellular Flows in the Small Diffusion Limit*, Physica D, Vol. 311-312, pp. 37-44, 2015.

104. M. Ho, Z. Sun, J. Xin, *Weighted Elastic Net Penalized Mean-Variance Portfolio Design and Computation*, SIAM Journal on Financial Mathematics, Vol. 6, pp. 1220-1244, 2015.

105. P. Yin, Y. Sun, J. Xin, *A geometric blind source separation method based on facet component analysis*, Signal, Image and Video Processing, Vol. 10, Issue 1, pp. 19-28, 2016.

106. Y. Lou, P. Yin, J. Xin, *Point Source Super-resolution via Non-convex L1 Based Methods*, J. Sci. Computing, 68(3), pp. 1082-1100, 2016.

107. J. Xin, Y. Yu, A. Zlatos, *Periodic orbits of the ABC flow with A=B=C=1,* SIAM J. Math Analysis,48(6), 2016, pp. 4087–4093.

108. T. McMillen, J. Xin, Y. Yu, A. Zlatos, *Ballistic Orbits and Front Speed Enhancement for ABC Flows,* SIAM J. Applied Dynamical Systems, 15(3), 2016, pp. 1753-1782.

109. N.B. Murphy, E. Cherkaev, J. Xin, J. Zhu, K. Golden, *Spectral Analysis and Computation of Effective Diffusivities in Space-Time Periodic Incompressible Flows,* Annals of Mathematical Sciences and Applications, 2(1), pp. 3-66, 2017.

110. S. Zhang, J. Xin, *Minimization of transformed L1 penalty: closed form representation and iterative thresholding algorithms*, Comm. Math Sciences, 15(2), pp. 511–537, 2017.

111. S. Zhang, P. Yin, J. Xin, *Transformed Schatten-1 Iterative Thresholding Algorithms for Low Rank Matrix Completion*, Comm. Math Sciences, 15(3), pp. 839–862, 2017.

112. P. Yin, J. Xin, *Iterative L1 minimization for non-convex compressed sensing*, J. Computational Mathematics, 35(4), 2017, pp. 437–449.

113. Y. Sun, W. Wu, J. Xin, *Computational Modeling of Spectral Data Fitting with Nonlinear Distortion*, Signal, Image and Video Processing, 11(4):651-658 (2017). DOI 10.1007/s11760-016-1006-2.

114. M. Ahn, J-S. Pang, J. Xin, *Difference-of-Convex Learning: Directional Stationarity, Optimality, and Sparsity*, SIAM J. Optimization, 27(3), pp. 1637-1665, 2017.

115. J. Lyu, J. Xin, Y. Yu, *Computing Residual Diffusivity by Adaptive Basis Learning via Spectral Method*, Numerical Mathematics: Theory, Methods & Applications, 10(2), pp. 351-372, 2017.

116. P. Yin, Z. Sun, W. Jin, J. Xin, *L1 Minimization Method for Link Flow Correction*, Transportation Research, Part B: Methodological, 104 (2017), pp. 398–408.

117. X. Long, K. Solna, J. Xin, *Three L1 based nonconvex methods in constructing sparse mean reverting portfolios*, J. Sci. Computing, 75(2), pp. 1156-1186, 2018. DOI:10.1007/s10915-017-0578-5.

118. J. Lyu, J. Xin, Y. Yu, *Curvature effect in shear flow: slowdown of turbulent flame speeds with Markstein number*, Comm. Math Physics, 359(2), pp. 515-533, 2018. DOI:10.1007/s00220-017-3060-1.

119. S. Zhang, J. Xin, *Minimization of transformed L1 penalty: Theory, Difference of Convex Function Algorithm, and Robust Application in Compressed Sensing*, Mathematical Programming Series B, 169(1), pp. 307-336, 2018. DOI:10.1007/s10107-018-1236-x.

120. P. Yin, J. Xin, Y-Y. Qi, *Linear Feature Transform and Enhancement of Classification on Deep Neural Network*, J. Sci. Computing, 76(3), pp. 1396-1406, 2018.

121. Z. Wang, J. Xin, Z. Zhang, *Computing effective diffusivity of chaotic and stochastic flows using structure preserving schemes*, SIAM J. Numerical Analysis, 56(4), 2322-2344, 2018. https://doi.org/10.1137/18M1165219.

122. J. Lyu, J. Xin, Y. Yu, *Residual Diffusivity in Elephant Random Walk Models with Stops*, Comm. Math. Sci., 16(7), pp. 2033-2045, 2018.

123. P. Yin, S. Zhang, J. Lyu, S. Osher, Y-Y. Qi, J. Xin, *BinaryRelax: A Relaxation Approach for Training Deep Neural Networks with Quantized Weights*, SIAM Journal on Imaging Sciences, 11(4), pp. 2205-2223, 2018.

124. P. Yin, S. Zhang, Y-Y. Qi, J. Xin, *Quantization and Training of Low Bit-Width Convolutional Neural Networks for Object Detection*, arXiv:1612.06052v2; J. Comput. Math, 37(3):349-359, 2019. Online 9/2018, Doi:10.4208/jcm.1803-m2017-0301. *Featured article in 2019.*

125. P. Yin, S. Zhang, J. Lyu, S. Osher, Y-Y. Qi, J. Xin, *Blended Coarse Gradient Descent for Full Quantization of Deep Neural Networks*, Research in the Mathematical Sciences, 6(1):14, Jan 2019. DOI:10.1007/s40687-018-0177-6.

126. M. Ho, J. Xin, *Sparse Kalman Filtering Approaches to Realized Covariance Estimation from High Frequency Financial Data*, Mathematical Programming, Series B, 176(1-2), pp. 247-278, July, 2019. DOI: 10.1007/s10107-019-01371-6.

127. B. Wang, P. Yin, A. Bertozzi, J. Brantingham, S. Osher, J. Xin, *Deep Learning for Real-Time Crime Forecasting and its Ternarization*, Chinese Annals of Mathematics, Series B, 40(6), pp. 949-966, 2019.

128. N.B. Murphy, E. Cherkaev, J. Zhu, J. Xin, K. Golden, *Spectral Analysis and Computation for Homogenization of Advection Diffusion Processes in Steady Flows*, Journal of Mathematical Physics, 61(1), 013102(2020).

129. T. Dinh, J. Xin, *Enhanced Diffusivity in Perturbed Senile Reinforced Random Walk Models*, Asymptotic Analysis, 122 (1-2), 87-104, 2021; DOI: 10.3233/ASY-201611.

130. T. Dinh, J. Xin, *Convergence of a Relaxed Variable Splitting Coarse Gradient Descent Method for Learning Sparse Weight Binarized Activation Neural Networks*, Frontiers in Applied Mathematics and Statistics: Mathematics of Computation and Data Science, 6:13, 2020. https://doi.org/10.3389/fams.2020.00013.

131. X. Dai, X. Kuang, J. Xin, A. Zhou, *Two-Grid Based Adaptive Proper Orthogonal Decomposition Method for Time Dependent Partial Differential Equations*, Journal of Sci. Computing, 84 (3), 1-27, 2020; https://doi.org/10.1007/s10915-020-01288-9

132. J. Lyu, Z. Wang, J. Xin, Z. Zhang, *Convergence analysis of stochastic structure-preserving schemes for computing effective diffusivity in random flows*, SIAM J. Numerical Analysis, 58 (5), pp. 3040-3067, 2020.

133. K. Bui, F. Park, S. Zhang, Y. Qi, J. Xin, *Structured Sparsity of Convolutional Neural Networks via Nonconvex Sparse Group Regularization*, Frontiers in Applied Mathematics and Statistics: Mathematics of Computation and Data Science, 6:529564, 2021. DOI:10.3389/fams.2020.529564.

134. H. Gu, J. Xin, Z. Zhang, *Error estimate for a POD method for solving viscous G-equations in incompressible cellular flows*, SIAM J Sci. Computing, 43(1), A636-A662, 2021.

135. Z. Long, P. Yin, J. Xin, *Global Convergence and Geometric Characterization of Slow to Fast Weight Evolution in Neural Network Training for Classifying Linearly Non-Separable Data*, Inverse Problems and Imaging, 15(1), pp. 41-62, Feb, 2021.

136. Z. Wang, J. Xin, Z. Zhang, *Sharp error estimates on a stochastic structure-preserving scheme in computing effective diffusivity of 3D chaotic flows*, SIAM J. Multiscale Modeling and Simulation, 19(3), pp. 1167-1189, 2021.

137. K. Bui, F. Park, Y. Lou, J. Xin, *A Weighted Difference of Anisotropic and Isotropic Total Variation for Relaxed Mumford-Shah Color and Multiphase Image Segmentation*, SIAM J. Imaging Sci, 14 (3), 1078-1113, 2021.

138. K. Bui, F. Park, S. Zhang, Y Qi, J. Xin, *Improving Network Slimming With Nonconvex Regularization*, IEEE Access, Vol. 9, 115292-115314, 2021.

139. Z. Long, P. Yin, J. Xin, *Learning Quantized Neural Nets by Coarse Gradient Method for Non-linear Classification*, Res. Math Sci. 8(48), July 2021. https://doi.org/10.1007/s40687-021-00281-4.

140. Y. Sun, J. Xin, *Lorentzian Peak Sharpening and Sparse Blind Source Separation for NMR Spectroscopy*, Signal, Image & Video Processing, 16(3), 633-641, 2022. https://doi.org/10.1007/s11760-021-02002-4

141. Y. Sun, K. Huang, J. Xin, *Structure Assisted NMF Methods for Separation of Degenerate Mixture Data with Application to NMR Spectroscopy*, International Journal of Mathematics and Computation, 33(1), 2022. ISSN 0974-570X (Online).

142. C. Kao, Y. Liu, J. Xin, *A Semi-Lagrangian Computation of Front Speeds of G-equation in ABC and Kolmogorov Flows with Estimation via Ballistic Orbits*, SIAM Interdisciplinary J. Multiscale Modeling & Simulation, 20 (1), pp. 107-117, 2022.

143. Z. Wang, J. Xin, Z. Zhang, *Computing effective diffusivities of 3D time-dependent chaotic flows with a convergent Lagrangian numerical method*, ESAIM: Mathematical Modeling and Numerical Analysis, 56 (2022), pp. 1521-1544.

144. J. Lyu, Z. Wang, J. Xin, Z. Zhang, *A convergent interacting particle method and computation of KPP front speeds in chaotic flows*, SIAM Journal on Numerical Analysis 60 (3), 1136-1167, 2022.

145. Z. Wang, J. Xin, Z. Zhang, *DeepParticle: learning invariant measure by a deep neural network minimizing Wasserstein distance on data generated from an interacting particle method*, Journal of Computational Physics, 111309, 2022.

146. F. Xue, Y. Qi, J. Xin, *RARTS: An Efficient First-Order Relaxed Architecture Search Method*, IEEE Access, Vol. 10, pp. 65901-65912, 2022.

147. Y. Liu, J. Xin, *Synchronized Front Propagation and Delayed Flame Quenching in Strain G-equation and Time-Periodic Cellular Flows*, Minimax Theory and its Applications, 8(1):109-119, 2023.

148. Z. Long, P. Yin, J. Xin, *Recurrence of Optimum for Training Weight and Activation Quantized Networks*, Applied and Computational Harmonic Analysis, 62 (2023), pp. 41-65.

149. K. Bui, Y. Lou, F. Park, J. Xin, *Difference of Anisotropic and Isotropic TV for Segmentation under Blur and Poisson Noise*, Frontiers in Computer Science, 5:1131317, June, 2023; doi:10.3389/fcomp.2023.1131317.2023.

150. Z. Li, B. Yang, P. Yin, Y. Qi, J. Xin, *Feature Affinity Assisted Knowledge Distillation and Quantization of Deep Neural Networks on Label-Free Data*, IEEE Access, Vol 11, pp. 78042-78051, 2023. DOI:10.1109/ACCESS.2023.3297890.

151. W. Whiting, B. Wang, J. Xin, *Convergence of Hyperbolic Neural Networks under Riemannian Stochastic Gradient Descent*, Comm. on Applied Math and Computation, online October 5, 2023; doi:10.1007/s42967-023-00302-9.

152. H. Gao, Z. Long, J. Xin, Y. Yu, *Existence of an effective burning velocity in a cellular flow for the curvature G-equation proved using a game analysis*, Journal of Geometric Analysis, 34 (3), 81(2024); DOI:10.1007/s12220-023-01523-3.

153. K. Bui, Y. Lou, F. Park, J. Xin, *An Efficient Smoothing and Thresholding Image Segmentation Framework with Weighted Anisotropic-Isotropic Total Variation*, Comm. on Applied Math and Computation, 34(3); online Jan, 2024; doi.org/10.1007/s42967-023-00339-w

154. Z. Wang, J. Xin, Z. Zhang, *A DeepParticle method for learning and generating aggregation patterns in multi-dimensional Keller-Segel chemotaxis systems*, Physica D, 460(2024), 134082. DOI:10.1016/j.physd.2024.134082.

155. J. Xin, Y. Yu, P. Ronney, *Lagrangian, Game Theoretic and PDE Methods for Averaging G-equations in Turbulent Combustion: Existence and Beyond*, Bulletin of Amer. Math Soc., 61(3), pp. 470-514, 2024. doi.org/10.1090/bull/1838.

156. X. Dai, M. Hu, J. Xin, A. Zhou, *An Augmented Subspace Based Adaptive Proper Orthogonal Decomposition Method for Time Dependent Partial Differential Equations*, J. Computational Physics, 113231, 2024; doi.org/10.1016/j.jcp.2024.113231.

157. H. Mitake, C. Mooney, H. Tran, J. Xin, Y. Yu, *Bifurcation of homogenization and nonhomogenization of the curvature G-equation with shear flows*, Mathematische Annalen, 391(2), 3077-3111, 2025; doi.org/10.1007/s00208-024-02983-w.

158. T. Zhang, Z. Wang, J. Xin, Z. Zhang, *A convergent interacting particle method for computing KPP front speeds in random flows*, SIAM/ASA Journal on Uncertainty Quantification, 13(2), 2025; doi.org/10.1137/23M1604564.

159. Z. Wang, J. Xin, Z. Zhang, *A Novel Stochastic Interacting Particle-Field Algorithm for 3D Parabolic-Parabolic Keller-Segel Chemotaxis System*, J. Sci Computing, 102(75), 2025; doi.org/10.1007/s10915-025-02816-1.

160. N.T. Tran, J. Xin, *Fourier-mixed window attention for efficient and robust long sequence time-series forecasting*, Frontiers in Applied Math. Stat., 2025; doi.org/10.3389/fams.2025.1600136.

161. A. Zhang, Z. Yang, N. Wang, Y. Qi, J. Xin, X. Li, P. Yin, *COMQ: A Backpropagation-Free Algorithm for Post-Training Quantization*, IEEE Access, 2025, Vol. 13, pp 99879-99891. DOI:10.1109/ACCESS.2025.3576737.

162. Z. Wu, R. Raquepas, J. Xin, Z. Zhang *Computing large deviation rate functions of entropy production for diffusion processes by an interacting particle method*, SIAM J. Sci. Computing, 47(6), pp. A3330-A3355, 2025.

163. J.D. Kim, J. Xin, *An Efficient Particle-Field Algorithm with Neural Interpolation based on a Parabolic-Hyperbolic Chemotaxis System in 3D*, in Numerical Mathematics: Theory, Methods and Applications, 19(2), pp. 535-552, 2026.

164. T. Zhang, Z. Wang, J. Xin, Z. Zhang, *A Bidirectional DeepParticle Method for Efficiently Solving Low-Dimensional Transport Map Problems*, J. Computational Physics, 561:114983, 2026.

165. W. Jing, J. Xin, Y. Yu, *Does Yakhot's growth law for turbulent burning velocity hold?*, Arch. Rat. Mech. Anal, 2026, to appear.

Books:

1. J. Xin, "An Introduction to Fronts in Random Media", Surveys and Tutorials in the Applied Math Sciences, Vol. 5, Springer, 2009.

2. J. Xin, Y-Y. Qi, "Mathematical Modeling and Signal Processing in Speech and Hearing Sciences", MS&A, Vol. 10, Springer, 2014.

Newsletters:

1. J. Xin, *Q&A with Multiscale Modeling & Simulation Editor-in-Chief*, SIAM News, 48(5), June, 2015.

2. J. Xin, *Training Quantized Deep Neural Networks and Applications with Blended Coarse Gradient Descent*, SIAM News, 52(4), May, 2019.

Special Issues:

1. L. Borcea, J-P. Fouque, S. Jin, L. Ryzhik, J. Xin, *Special Issue in Honor of G. Papanicolaou*, Comm. Math Sci, 13(4), 2015.

2. Y. Liu, J-S. Pang, J. Xin, *Nonconvex Optimization for Statistical Learning*, Mathematical Programming. Vol. 176, Number 1-2, 2019.

Refereed Proceedings:

1. L. Berlyand, J. Xin, *Renormalization group technique for asymptotic behavior of a thermal diffusive model with critical nonlinearity*, in Recent Developments in Evolution Equations, eds. A. C. McBride, G. F. Roach, pp 76-85, Longman Scientific and Technical, John Wiley and Sons, 1995.
2. J. Xin, *Fluid Limit and Free Boundaries in Biodegradation,* Proceedings of the 1999 Chiba International Conference on Free Boundaries, Gakuto International Series, Math Sci & Applications, Vol. 13 (Free Boundary Problems: Theory and Applications 1), April, 2000, pp 429-440.
3. Y-Y Qi, J. Xin, *A Perception and PDE Based Nonlinear Transformation for Processing Spoken Words (short version)*, Proceedings of the 6th International Conference on Spoken Language Processing (ICSLP), Vol. I, pp 445-448, 2000.
4. J. Xin, Y-Y Qi, L. Deng, *Time Domain Computation of a Nonlinear Nonlocal Cochlear Model with Applications to Multitone Interaction in Hearing (summary)*, Journal of the Acoustical Soc. America, Vol. 112, No. 5, Pt. 2 of 2, p. 2300, 2002. Proceedings of the First Pan-American/Iberian Meeting on Acoustics, Mexico, Dec, 2002.
5. M. D. LaMar, Y-Y Qi, J. Xin, *A simple hydrodynamic semi-continuous model of vocal-fold motion (summary)*, Journal of the Acoustical Soc. America, Vol. 112, No. 5, Pt. 2 of 2, p. 2444, 2002. Proceedings of the First Pan-American/Iberian Meeting on Acoustics, Mexico, Dec, 2002.
6. J. Xin, Y-Y Qi, *A two level model of the masking property of human ear (summary)*, Journal of the Acoustical Soc. America, Vol. 114, No. 5, Pt. 2, p. 2358, 2003.
7. J. Xin, *Minimizing dispersive instability in time domain computation of steady state responses of cochlear models*, p.136, Midwinter Research Meeting, Association for Research in Otolaryngology, 2004.
8. J. Xin, *Asymptotic Analysis of Nonlinear Schrödinger Equations and. Dynamics of Vortices and Light Bullets*, Proceedings of International Congress of Chinese Mathematicians 2001, Taipei; New Studies in Advanced Mathematics, ed. S-T Yau, Vol. 4, pp 575 – 585, International Press, 2004

9. J. Xin, *Variational Principles and Large Scale Effective Quantities*, pp 74-81, Proceedings of the 4th International Workshop on Scientific Computing and Applications, eds B. Guo, Z. Shi, Scientific Press, Beijing, 2007.

10. J. Xin, *Ear Modeling and Sound Signal Processing*, Proceedings of International Congress of Chinese Mathematicians 2004, Hong Kong; New Studies in Advanced Mathematics, ed. S-T Yau, Vol. 42, pp 819 – 830, AMS and International Press, 2008.

11. J. Xin, Y-Y Qi, *A Many to One Discrete Auditory Transform*, Proceedings of International Congress of Chinese Mathematicians, Hangzhou, Dec 17-22, 2007; Vol. 3, pp 812-826, International Press.

12. J. Nolen, J. Xin, *Variational principle and reaction-diffusion front speeds in random flows*, International Congress of Industrial and Applied Mathematics, PAMM, Volume 7, Issue 1, 2009, pp 1040701-1040702 (published on-line).

13. J. Xin, M. Yu, Y. Qi, H-I Yang and F-G Zeng, *A Nonlocally Weighted Soft-Constrained Natural Gradient Algorithm for Blind Separation of Reverberant Speech*, 2009 IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, Oct. 18-21, 2009, New Paltz, New York.

14. M. Yu, J. Xin, Y. Qi, H-I Yang and F-G Zeng, *A Nonlocally Weighted Soft-Constrained Natural Gradient Algorithm and Blind Separation of Reverberant Speech Mixtures*, 43rd Asilomar Conference on Signals, Systems and Computers, Nov. 1-4, 2009, Pacific Grove, CA.

15. M. Yu, W. Ma, J. Xin, S. Osher, *Convexity and Fast Speech Extraction by Split Bregman Method*, Interspeech 2010, pp 398-401, Sept 26-30, 2010, Japan.

16. W. Ma, M. Yu, J. Xin, S. Osher, *Reducing Musical Noise in Blind Source Separation by Time-Domain Sparse Filters and Split Bregman Method*, Interspeech 2010, pp 402-405, Sept 26-30, 2010, Japan.

17. Y. Sun, J. Xin, *A Recursive Sparse Blind Source Separation Method for Nonnegative and Correlated Data in NMR Spectroscopy*, the 14th International Conference on Computer Analysis of Images and Patterns, et al (Eds.), CAIP 2011, LNCS 6855, pp. 81-88, 2011, Springer-Verlag.

18. Y. Sun, J. Xin, *Content Adaptive Image Matching by Color-Entropy Segmentation and Inpainting*, 14th International Conference on Computer Analysis of Images and Patterns, Springer-Verlag., vol. LNCS 68, (2011), pp. 471-478.

19. S. Zhang, M. Lee, M. Yu, J. Xin, *Modeling Category Identification Using Sparse Instance Representation*, Proceedings of the 33rd Annual Conference of the Cognitive Science Society, Boston, pp. 2574–2579, 2011.

20. J. Xin, Y. Yu, *Comparison of Front Speed Asymptotics of G-equation and its Variants*, Proceedings of the International Conference on Far-From-Equilibrium Dynamics, RIMS Kokyuroku Bessatsu, Kyoto University, Japan, B31(2012), pp. 211-223.

21. R. Ritch, M. Yu, J. Xin, *A Triple Microphone Real-Time Speech Enhancement Algorithm Based on Approximate Array Analytical Solutions*, Interspeech 2012, paper 242, Oregon, USA, Sept 2012.

22. M. Yu, J. Xin, *Exploring Off Time Nature for Speech Enhancement*, Interspeech 2012, paper 191, Oregon, USA, Sept 2012.

23. Q. He, J. Xin, *A Randomly Perturbed Infomax Algorithm for Blind Source Separation*, Proceedings of the 38th International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Vancouver, pp. 3218 - 3222, May 2013.

24. Y. Lou, S. Osher, J. Xin, *Computational aspects of constrained L1-L2 minimization for compressive sensing*, in Modelling, Computation and Optimization in Information Systems and Management Sciences, Springer Series on Advances in Intelligent Systems and Computing 359, pp. 169–180, eds. H.A. Le Thi, T. Pham Dinh, N.T. Nguyen, 2015.

25. F. Park, Y. Lou, J. Xin, *A Weighted Difference of Anisotropic and Isotropic Total Variation for Relaxed Mumford-Shah Image Segmentation*, IEEE ICIP, Phoenix, Arizona, USA, Sept. 25-28, 2016.

26. P. Yin, J. Lyu, S. Zhang, S. Osher, Y-Y. Qi, J. Xin, *Understanding Straight-Through Estimator in Training Activation Quantized Neural Nets*, International Conference on Learning Representations (ICLR), New Orleans, May, 2019.

27. Z. Li, X. Luo, B. Wang, A. Bertozzi, J. Xin, *A Study on Graph-Structured Recurrent Neural Networks and Sparsification with Application to Epidemic Forecasting*, in Proc. World Congress Global Optimization, Metz, France, July 2019.

28. F. Xue, J. Xin, *Learning Sparse Neural Networks via L0 and TL1 by a Relaxed Variable Splitting Method with Application to Multi-scale Curve Classification*, in Proc. World Congress Global Optimization, Metz, France, July, 2019.

29. B. Yang, J. Lyu, S. Zhang, Y-Y Qi, J. Xin, *Channel Pruning for Deep Neural Networks via a Relaxed Group-wise Splitting Method*, In Proc. of 2nd International Conference on AI for Industries, Laguna Hills, CA; Sept. 25-27, 2019.

30. F. Xue, J. Xin, J. Lyu, S. Zhang, Y-Y Qi, *A Multistage Backward Differentiable Method for Constructing Light Convolutional Neural Networks*, In Proc. of 2nd International Conference on AI for Industries, Laguna Hills, CA; Sept. 25-27, 2019.

31. J. Lyu, J. Xin, Y. Yu, *Computing Residual Diffusivity by Adaptive Basis Learning via Super-Resolution Deep Neural Networks*, Advances in Intelligent Systems and Computing, vol. 1121, Springer, Cham 2020. DOI https://doi.org/10.1007/978-3-030-38364-0_25.

32. T. Dinh, J. Xin, *Convergence of a Relaxed Variable Splitting Method for Learning Sparse Neural Networks via L1, L0, and transformed-L1 Penalties*, in Proceedings of Intelligent Systems Conference (IntelliSys) 2020, Sept. 3-4, Amsterdam, The Netherlands.

33. T. Dinh, B. Wang, A. Bertozzi, S. Osher, J. Xin, *Sparsity Meets Robustness: Channel Pruning for the Feynman-Kac Formalism Principled Robust Deep Neural Nets*, in Proceedings of the 6th International Conference on Machine Learning, Optimization, and Data Science, Siena-Tuscany, Italy; July, 2020. *Awarded 1st Special Mention.*

34. Z. Li, Y. Zheng, J. Xin, G. Zhou, *A Recurrent Neural Network and Differential Equation Based Spatiotemporal Infectious Disease Model with Application to COVID-19*, in Proc. of the 12th International Conference on Knowledge Discovery and Information Retrieval, Nov 2-4, 2020.

35. K. Bui, F. Park, S. Zhang, Y-Y. Qi, J. Xin, *Nonconvex Regularization for Network Slimming: Compressing CNNs Even More*, awarded **Springer-Verlag Best Paper**, at the 15th International Symposium on Visual Computing, Oct. 5-7, 2020.

36. J. Lyu, S. Zhang, Y-Y. Qi, J. Xin, *AutoShuffleNet: Learning Permutation Matrices via an Exact Lipschitz Continuous Penalty in Deep Convolutional Neural Networks*, in Proceedings of the 26th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), August, 2020; **selected as a KDD 2020 most influential paper**: https://www.paperdigest.org/2021/03/most-influential-kdd-papers-2021-03/

37. Y. Zheng, Z. Li, J. Xin, G. Zhou, *A Spatial-Temporal Graph Based Hybrid Infectious Disease Model with Application to COVID-19*, in Proc. of the 10th International Conference on Pattern Recognition Applications and Methods, Feb 4-6, 2021.

38. F. Xue, J. Xin, *Network Compression via Cooperative Architecture Search and Distillation*, IEEE International Conference on AI for Industries, Sept. 20-22, 2021.

39. Z. Li, B. Wang, J. Xin, *An Integrated Approach to Produce Robust Deep Neural Network Models with High Efficiency* , in Proceedings of International Conference on Machine Learning, Optimization, and Data Science, Oct. 2021. **Won Best Paper Award**.

40. B. Yang, F. Xue, Y. Qi, J. Xin, *Improving Efficient Semantic Segmentation Networks by Enhancing Multi-Scale Feature Representation via Resolution Path Based Knowledge Distillation and Pixel Shuffle*, International Symposium on Visual Computing, Oct, 2021.

41. C. Hu, G. Lin, B. Wang, M. Yue, J. Xin, *Post-Fault Power Grid Voltage Prediction via 1D-CNN with Spatial Coupling*, IEEE International Conference on AI for Industries, 2022.

42. Z. Li, J. Xin, G. Zhou, *An Integrated Recurrent Neural Network and Regression Model with Spatial and Climatic Couplings for Vector-Borne Disease Dynamics*, International Conference on Pattern Recognition Applications and Methods, Feb, 2022.

43. Y. Zheng, C. Hu, G. Lin, M. Yue, B. Wang, J. Xin, *Glassoformer: a query-sparse transformer for post-fault power grid voltage prediction*, IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), May, 2022.

44. F. Xue, B. Yang, Y-Y. Qi, J. Xin, *Searching Intrinsic Dimensions of Vision Transformers*, in Proc. of the 20th International Conference on Innovations in Engineering & Sciences (PICIES-22), 2022.

45. Z. Li, J. Xin, *Channel Pruning in Quantization-aware Training: An Adaptive Projection-Gradient-Descent-Shrinkage-Splitting Method*, IEEE Inter. Conf. on AI for Industries, 2022.

46. Z. Long, Y. Zheng, M. Yu, J. Xin, *Enhancing Zero-Shot Many to Many Voice Conversion via Self-Attention VAE with Structurally Regularized Layers*, IEEE Inter. Conf. on AI for Industries, 2022.

47. K. Bui, F. Xue, F. Park, Y. Qi, J. Xin, *A Proximal Algorithm for Network Slimming*, in Proc. of the 9th International Conference on Machine Learning, Optimization and Data Science, Sept, 2023.

48. K. Bui, Y. Lou, F. Park, J. Xin, *Weighted Anisotropic-Isotropic Total Variation for Poisson Denoising*, IEEE International Conference on Image Processing (ICIP), 1020-1024, 2023.

49. S-H. Wang, Y-C. Hsu, J. Baker, A. L. Bertozzi, J. Xin, B. Wang, *Rethinking the Benefits of Steerable Features in 3D Equivariant Graph Neural Networks*, Inter. Conf. on Learning Representations (ICLR), May, 2024.

50. E. Dayag, K. Bui, F. Park, J. Xin, *An Image Segmentation Model with Transformed Total Variation*, in Proc. of the European Signal Processing Conference, Aug, 2024.

51. N. T. V. Tran, J. Xin, G. Zhou, *FWin transformer for dengue prediction under climate and ocean influence*, in Proc. of Inter. Conf. on Machine Learning, Optimization, and Data Science, Sept, 2024.

52. Y. Zheng, Z. Xu, F. Xue, B. Yang, J. Lyu, S. Zhang, Y. Qi, J. Xin, *AFIDAF: Alternating Fourier and Image Domain Adaptive Filters as an Efficient Alternative to Attention in ViTs*, in Proc. of International Symposium of Visual Computing, Oct, 2024.

53. J.D. Kim, J. Xin, *A computational study on a parabolic-hyperbolic chemotaxis system for modeling angiogenesis by a stochastic interacting particle field method*, International Conference on Computer Science, Applied Mathematics and Applications, pp. 64-75, 2025.

54. C. Mooney, Z. Wang, J. Xin, Y. Yu,
Global Well-posedness and Convergence Analysis of Score-based Generative Models via Sharp Lipschitz Estimates,
International Conference on Learning Representations (ICLR), 2025.
https://openreview.net/forum?id=r3cWq6KKbt

55. N.T. Tran, K. Bui, J. Xin, *Deep Image Prior with L0 Gradient Regularizer for Image Smoothing*, in Proc. of ICASSP 2026, pp. 8687-8691.

56. E. Dayag, N.T. Tran, J. Xin, *Filter then Attend: Improving Attention-based Time Series Forecasting with Spectral Filtering*, in Proc. of ICASSP 2026, pp. 1131-1135.

57. N.T. Tran, F. Xue, S. Zhang, J. Lyu, Y. Zheng, Y-Y Qi, J. Xin, *SEMA: a Scalable and Efficient Mamba like Attention via Token Localization and Averaging*, in Proc. of International Conference on Machine Learning, July, 2026.

58. Z. Yu, X. Liu, H. Mao, M. Liu, L. Chen, J. Xin, Y. Yu, *Evaluating AI Grading on Real-World Handwritten College Mathematics: A Large-Scale Study Toward a Benchmark*, in Proc. of International Conference on Machine Learning, July, 2026.

59. A. Prabu, N.T. Tran, J. Xin, G. Zhou, *CrossLag: Predicting Major Dengue Outbreak Signals with Limited Data and Transformers*, Asilomar Conference on Signals, Systems, and Computers 2026.

Selected Invited Lectures and Organized Meetings since 2005:

1. Chair of the Organizing Committee on "Mathematics of the Ear and Sound Signal Processing" workshop, IPAM, UCLA, Jan 31 - Feb 2, 2005.
2. Organizing Committee, IMBS Conference on Mathematics and Vision, Nov 9-11, 2007, Irvine, CA.
3. Organizing Committee, SAMSI Program in Random Media 2007-2008, NC.
4. Organizing Committee, IMBS Conference on Human and Machine Learning, March 11-15, 2009, Irvine, CA.
5. Organizing and Scientific Committees, SIAM conference on Analysis of PDE, Miami, Dec., 2009.
6. PIMS Distinguished Lecture, Simon Fraser Univ, Vancouver, Canada, Mar. 15, 2010.
7. Workshop on Interdisciplinary Applied and Computational Mathematics, Zhejiang University, Hangzhou, China, June 2-6, 2010.
8. International Conference on Applied Mathematics, City University of Hong Kong, June 7-10, 2010.
9. DTRA-NSF Algorithm Workshop, Chapel Hill, NC, June 21-24, 2010.
10. Image Processing Workshop, IAS/Park City Math Inst, Utah, July 12–15, 2010.
11. Invited Lectures at Summer School of Institute of Computational Mathematics, Chinese Academy of Sciences, Beijing, China, Aug. 2-12, 2010.
12. International Conference on Far From Equilibrium Dynamics, Kyoto, Japan, Jan 4-8, 2011.
13. Applied Mathematics Colloquium, Caltech, Jan 24, 2011.
14. IPAM Workshop on Random Media: Homogenization and Beyond, UCLA, Jan 25-28, 2011.
15. Applied Mathematics Colloquium at UC Merced, April 22, 2011.
16. Frontiers in the Applied and Computational Mathematics Conference at NJIT, June 9-11, 2011, Newark, NJ.
17. DTRA-NSF Algorithm Workshop, June 6-9, 2011, Boston.

18. Applied Math Seminar, Sichuan Univ, Aug. 14, 2012, Chengdu, China.

19. Computational Mathematics Seminar, Institute of Computation, Chinese Academy of Sciences, Aug. 31, 2012, Beijing, China.

20. NSF-DTRA-NGA workshop, San Diego, Nov, 2012.

21. Organizer, Recent Developments in Applied Mathematics, Stanford University, Jan 24–27, 2013.

22. Adaptive Data Analysis and Sparsity Workshop, IPAM, UCLA, Jan-Feb, 2013.

23. Mathematics Colloquium, Georgia Tech, March, 2013.

24. Computational Mathematics Seminar, Institute of Computation, Chinese Academy of Sciences, March, 2013, Beijing.

25. Mathematics Colloquium, Tulane Univ, April, 2013.

26. Mathematics Colloquium, San Diego State Univ, May, 2014.

27. Mathematics Colloquium, Univ Wisconsin at Madison, Sept, 2014.

28. Computational Math Seminar, Chinese Academy of Sciences, Sept., 2014, Beijing, China.

29. Math Physics Seminar, Univ. Helsinki, Oct. 1, 2014, Helsinki, Finland.

30. Inst. Mittag Leffler Seminar, Oct. 4, 2014, Stockholm, Sweden.

31. International Conference on Statistics & Computational Interface to Big Data, IAS, HKUST, Hong Kong, Jan, 2015.

32. International Workshop on Optimization, Sparsity, Adaptive Data Analysis, March, 2015, Beijing, China.

33. Microsoft TechTalk, April, 2015, Redmond, WA.

34. Third International Conference on Modelling, Computation and Optimization in Information Systems and Management Sciences, May, 2015, Metz, France.

35. International Conference on Recent Advances in Applied and Computational Mathematics, May, 2015, Wuhan, China.

36. DTRA-NSF Workshop, Arlington, VA, July, 2015.

37. Epstein Institute Seminar, Industrial & System Engineering, USC, Sept 10, 2015.

38. Applied Math Seminar, Univ. of Utah, Salt Lake City, Sept 14, 2015.

39. Southern CA Applied Mathematics Symposium, June 4, 2016.

40. Workshop on Computational Modeling and Data Science, Mich. State Univ, Oct, 2016.

41. Applied math seminar, Stanford Univ, Jan, 2017.

42. Organizing Committee, International Conference on Nonconvex Statistical Learning, USC, May, 2017.

43. Math Colloquium, UC San Diego, June, 2017.

44. Qualcomm Tech Seminar, San Diego, Sept, 2017.

45. Distinguished Lectures, UT Dallas and SMU, March, 2018.

46. Banff Workshop on Advanced Developments for Surface and Interface Dynamics, June, 2018.

47. Applied Math Colloquium, Penn State Univ, Aug 27, 2018.

48. Center for Nonlinear Analysis Seminar, CMU, Aug 30, 2018.

49. Applied Math Colloquium, USC, Sept 24, 2018.

50. Applied Math Colloquium, Purdue Univ, Oct. 22, 2018.

51. International Conference on Mathematics of Data Science, Old Dominion Univ, Nov 3-4, 2018.

52. Mathematical Modeling and Computational Methods for Multiscale Problems in Science & Engineering, ACMS30, Univ of Arizona, Nov 29-30, 2018.

53. Workshop on Machine Learning for Multiscale Model Reduction, Harvard Univ, 03/2019.

54. Co-Organizer, Southern CA PDE conference, Irvine, May 31- June 1, 2019.

55. Applied Math Seminar, Univ of Sydney, 11/2019.

56. Plenary speaker, the 6th International Conference on Computer Science, Applied Mathematics and Applications (ICCSAMA), 12/2019, Hanoi, Vietnam.

57. IPAM Workshop on Stochastic Analysis Related to Hamilton-Jacobi PDEs, UCLA, 05/2020.

58. H. B. Keller Colloquium, CalTech, 02/2021.

59. Mathematical Data Science Seminar, Purdue University, 04/2021.

60. International Conference on Mathematics for Nonstationary Signals and Applications in Geophysics and other Fields (NoSAG21), L'Aquila, Italy, 07/2021.

61. Applied Mathematics Colloquium, Columbia University, 11/2021.

62. Optimal Transport and Mean Field Games Online Seminar, Univ. South Carolina & UCLA, 12/2021.

63. Computational Applied Math and Machine Learning Seminar, Iowa State Univ, 03/2022.

64. Computational Applied Math Seminar, Univ Evora, 05/2022.

65. International Conference on Scientific Computation and Differential Equations, Iceland, 7/2022.

66. Optimization Seminar, Nanjing Univ, 09/2022.

67. Applied Mathematics Colloquium, Columbia University, 10/2022.

68. Math and Data Seminar, New York University, 10/2022.

69. International Conference on New Trends of Computational and Data Sciences, CalTech, 12/2022.

70. Applied Math and Analysis Seminar, Duke University, 03/2023.

71. Brin Mathematics Research Center Workshop on Branching Processes and Reaction-Diffusion Equations, University of Maryland, College Park, 03/2023.

72. Applied Analysis Seminar, Waseda Univ, Japan, 03/2023.

73. Nonlinear Phenomena Seminar, Ryukoku Univ, Kyoto, 03/2023.

74. Hokudai Math Modeling Club Seminar, Hokkaido Univ, Sapporo, 05/2023.

75. Mathematics of Machine Learning Seminar, Univ of Mass., Amherst, 09/2023.

76. Dynamical Systems Seminar, Courant Institute, New York Univ, 10/2023.

77. Colloquium, National Cheng-Kung University, Tainan, Taiwan, 02/2024.

78. Colloquium, National Taiwan University, Taipei, Taiwan, 03/2024.

79. Colloquium, Nanyang Tech University, Singapore, 03/2024.

80. International Conference on Multiscale Modeling and Simulation based on Physics and Data, IPAM, UCLA, 04/2024.

81. Analysis Seminar, UCSD, 05/2024.

82. NSF CompMath PI Meeting, Univ of Washington, 07/2024.

83. International Congress of Basic Science, Beijing, 07/2024.

84. Applied Math Colloquium, Columbia Univ, 09/2024.

85. Math Colloquium, Univ of Utah, 11/2024.

86. Bloomberg Quantitative Finance Seminar, New York City, 12/2024.

87. Plasma Seminar, Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University, Japan, 3/2025.

88. Computational Applied Math Colloquium, Univ of Chicago, 4/2025.

89. Math Colloquium, Univ of Wisconsin at Madison, 4/2025.

90. NAAI International AI Seminar, 5/2025.

91. CMSE 10th Anniversary Workshop, Michigan State Univ, 8/2025.

92. Nonlinear Phenomena in Complex Systems, UCLA, 8/2025.

93. Inst. Mittag-Leffler Seminar, Sweden, 10/2025.

94. LMU at Munich Seminar, Germany, 11/2025.

95. Mathematics and Application Colloquium, KAUST, Saudia Arabia, 12/2025.

96. Mathematics Colloquium, NYUAD, UAE, 12/2025.

97. Workshop on Deep Learning meets PDE, Univ of Minnesota, 4/2026.

Ph.D Dissertation Advisor of:

George Fennemore (Ph.D 1996, Univ of Arizona): Head of Permitting Land & Ranches, Barrick Gold Corp, Elko, Nevada.

Regan Murray (Ph.D 1999, Univ of Arizona): Director, Water Infrastructure Division, Environmental Protection Agency, DC.

Gema Mercado (Ph.D 1999, Univ of Arizona): Secretaria de Educacion, Zacatecas, Mexico.

M. Drew LaMar (Ph.D 2005, UT Austin): tenured faculty at College of William and Mary, VA.

James H. Nolen (Ph.D 2006, UT Austin): tenured faculty at Duke University.

Meng Yu (Ph.D 2012, UC Irvine): Tencent AI lab, Seattle, WA.

Yu-Yu Liu (Ph.D 2012, UC Irvine): tenured faculty at National Cheng Kung Univ, Taiwan.

Jie Feng (Ph.D 2014, UC Irvine): Airbnb, NY.

Xiaolong Long (Ph.D 2014, UC Irvine): Google, LA, CA.

Penghe Zu (Ph.D 2015, UC Irvine): Google, Bay Area, CA.

Michael Ho (Ph.D 2016, UC Irvine): Epirus, CA.

Penghang Yin (Ph.D 2016, UC Irvine): tenured faculty at SUNY Albany.

Shuai Zhang (Ph.D 2017, UC Irvine): Qualcomm, San Diego, CA.

Jiancheng Lyu (Ph.D 2018, UC Irvine): Qualcomm, San Diego, CA.

Thu Dinh (Ph.D 2020, UC Irvine): Meta, NJ.

Fanghui Xue (Ph.D 2022, UC Irvine): Qualcomm, Shanghai, China.

Biao Yang (Ph.D 2022, UC Irvine): Huawei, Shen Zhen, China.

Ziang Long (Ph.D 2022, UC Irvine): Meta, Mountain View, CA.

Kevin Bui (Ph.D 2023, UC Irvine): SRI International, MI.

Zhijian Li (Ph.D 2023, UC Irvine): Woven by Toyota, Bay Area, CA.

Yunling Zheng (Ph.D 2024, UC Irvine): Qualcomm, San Diego, CA.

Nhat Thanh Van Tran (Ph.D 2026, UC Irvine): Vinmotion, CA.

Postdoctoral Fellow Mentor of:

1997-8 at the University of Arizona:

S. Malham (Ph.D, Imperial College, UK): Heriot-Watt University, UK.

2003-5 at the University of Texas at Austin:

Y-S Kim (Ph.D, Courant Institute, NYU): Chung-Ang University, S. Korea.

M. Rudd (Ph.D, Univ of Utah): The Univ. of the South at Sewanee, TN.

Since 2009 at UC Irvine:

J. Liu (Ph.D, Univ Maryland), W. Ma, (Ph.D, UCLA), E. Esser (Ph.D, UCLA).

Y. Sun (Ph.D, Michigan State Univ): Florida International Univ, Miami.

Y. Lou (Ph.D, UCLA): UNC Chapel Hill.

Q. He (Ph.D, Wayne State Univ): JP Morgan-Chase Banks.

B. Murphy (Ph.D, Univ of Utah): Univ of Utah.

Editorial Boards:

Multiscale Modeling and Simulation (2006 –); Methods and Applications of Analysis (2008 –); Annals of Mathematical Sciences and Applications (2016–), Comm. Info & Systems (2016–). Dynamics of PDE (2003 –). Communications in Math Sciences (2002 –2021).

Professional Services:

12/2025–8/2027 Chair, Organizing Committee, International Workshop on Mathematics of Efficient AI with Scientific Applications, Institut Mittag-Leffler, Sweden, Aug. 2-6, 2027.

7/2023-6/2025 Chair, Organizing Committee, International Workshop on Efficient and Reliable Deep Learning Methods and their Scientific Applications, Banff International Research Station (Alberta, Canada), June 22 - 27, 2025.

1/1/2023 through 12/31/2025: SIAM Major Awards Committee.

7/2023 Chair, SIAM Subcommittee on SIAM Journal on Control and Optimization.

1/1/2022 through 12/31/2024: SIAM Journals Committee.

1/1/2025 through 12/31/2027: SIAM Journals Committee.

12/12/2021 – present: Scientific Committee, Southern California Applied Mathematics Symposium (SOCAMS).

6/2019, Organizing Committee, Southern California Partial Differential Equations Conference, Irvine.

5/2017, Organizing Committee, International Conference on Nonconvex Statistical Learning, USC.

1/2013: Organizing Committee, International Conference on Recent Developments in Applied Mathematics, Stanford University.

12/2009, Organizing Committee, SIAM Conference on Analysis of Partial Differential Equations, Miami.

Panelist and Reviewer for the National Science Foundation, Air Force Office of Scientific Research, Research Grant Council of Hong Kong, Marsden Fund of New Zealand.

Referee for major mathematics, engineering and physics journals: AMS/SIAM/IEEE Journals, Physical Review Series, Physics of Fluids, Physica D, Acta Acustica, Journals of Speech Language Hearing Research, Signal Processing, Neural Computing and Applications, Proc. National Academy of Sciences (PNAS), Applied Computational Harmonic Analysis.

Services at UC Irvine:

Affiliated faculty at the Center for Complex Biological Systems, Center of Mathematical and Computational Biology, Center for Hearing Research, Institute for Mathematical Behavioral Sciences.

9/2024–8/2027: Committee on Rules and Jurisdiction, Academic Senate.

2023-2025: Planning Committee, Master of Applied AI for Science and Industry, School of Physical Sciences.

2018–2019: Science in Action Faculty Ambassador, Graduate Division.

2011-2014: Campuswide Honors Program Board.

Services in Orange County:

1/31/2026: Countdown round judge, MathCounts Regional Competition.

2/15/2025: Countdown round judge, MathCounts Regional Competition.

2/10/2024: Countdown round judge, MathCounts Regional Competition.

2/18/2023: Countdown round judge, MathCounts Regional Competition.

3/19/2022: Judge, Orange County Science and Engineering Fair (OCSEF).

2/22/2020: Countdown round judge, MathCounts Regional Competition.

4/11/2016: Judge, Orange County Science and Engineering Fair (OCSEF).

3/2011: Grader, MathCounts Regional Competition.

Service as Director of iCAMP (2009-2015)

Served as director of iCAMP (Interdisciplinary Computational and Applied Mathematics Program), the NSF funded undergraduate research and education program at UCI to recruit and nurture students to achieve advanced degrees in STEM areas. The program offered M77 sequence to 1st and 2nd year undergraduate students during the regular school year and selected on average 20 students per year for an 8 week summer camp to do supervised research on campus in four general areas: image and signal processing, game simulations, and collaborative filtering (machine learning). A

modern computer lab was available with concerted supervision by faculty, postdocs and graduate students. Four full cycles of teaching and summer research were completed. Many women and miniority students were among the summer iCAMPers.

One of our goals was to offer a unique learning and research experience for first and second year undergraduate students based on hands-on programming and concrete applications in the digital age. Some fun problems were: barcode deblurring, cancer cell shape classification and tumor identification, Blokus games, contextual landmark tracking, sound demixing, data ensemble based predictions (random forest, boosting, stacking). Mathematically, students learned to combine linear algebra, statistics, and optimization techniques.

Many students produced interesting and novel results for conference presentations at regional and national levels and SIAM publications. A sampler of such activities was:

(1) Fernando Aguilar, Salvador Badillo-Riose and Vernice Mojica presented at the Society for Advancement of Chicanos and Native Americans in Science (SACNAS) National Conference in San Jose, October 27-30, 2011.

(2) Swati Bhonsle, Alissa Klinzman and Allison Mok presented at the Pacific Coast Undergraduate Mathematics Conference at Cal Poly Pomona on March 10, 2012.

(3) Feature Identification for Colon Tumor Classification (by Melody Lim, Anthony Hou, Natalie Congdon, and Janine Chua), SIAM Undergraduate Research Online (SIURO), Vol. 6, Oct. 28, 2013. DOI: 10.1137/13S012212

(4) Contextual Point Matching for Video Stabilization (by Ling Han Meng, Joseph Geumlek, Holly Chu, Justin Hoogenstyrd), SIAM Undergraduate Research Online (SIURO), Vol. 6, Dec 30, 2013. DOI: 10.1137/13S012285

The program supported math–ICS faculty (H-K Zhao, S. Eichhorn – M. Welling, A. Ihler), postdocs (E. Esser, F. Park, W. Ma, Y. Lou, R. Lai, Q. He, B. Murphy – D. Gorur), and graduate students (M. Yu, R. Campbell, J. Liang, J. Feng, J. Rische, R. Ritch, A. Konstorum, J. Wilkinson, S. Zhang – S. Ahn, Q. Liu, S. Forouzan, Nick Gallo, Wei Ping) either during the school year and/or summer months. The program offered stipend and on campus housing with meal plans to undergraduate students from a broad range of ethnic and scientific backgrounds across multiple disciplines and departments.

Our assessment data showed that after participating in the iCAMP courses and summer research program, there was an 1) increase in the likelihood the student will consider graduate school or STEM industry careers, 2) increase in positive attitude towards science and increased confidence in their analytical abilities and 3) a net improvement in a skills based mathematics and data analysis exam.