Curriculum Vitae of Jun Liu

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EMPLOYMENT

- Associate Professor, Department of Mathematics and Statistics, Southern Illinois University Edwardsville, 7/2023-now.
- Assistant Professor, Department of Mathematics and Statistics, Southern Illinois University Edwardsville, 8/2017-6/2023.
- Assistant Professor, Department of Mathematics and Statistical Sciences, Jackson State University, 8/2015-8/2017.
- Teaching/Research Assistant, Department of Mathematics, Southern Illinois University Carbondale, 8/2010-8/2015.
- Software Engineer, China National Software and Service Co., Ltd., Guangzhou, China, 7/2004-8/2007.

EDUCATION

- Ph.D., Computational Mathematics, Southern Illinois University Carbondale (SIUC), USA, 8/2010-8/2015.
- M.S., Computational Mathematics, South China Normal University, China, 9/2007-7/2010.
- B.S., Information and Computing Science, Guangdong University of Technology, China, 9/2000-6/2004.

GRANTS

- PI, "Fast Parallel-in-Time Algorithms: Analysis and Applications", SIUE Internal STEP Grant, 2022-2023.
- Co-PI (Former PI), "CBMS Conference: Computational Methods in Optimal Control", NSF DMS-1743826, 2018.
- PI, "Numerical Algorithms for PDE Dynamical Models of Metastatic Cancers", SIUE Internal STEP Grant, 2018-2019.

COURSES TAUGHT at SIUE

Undergraduate-level:
- MATH 165-Introduction to MATLAB Programming and Problem Solving (Fall 2022)
- MATH 152-Calculus II (Spring 2018, Spring 2019, 2021)
- MATH 305-Differential Equations I (Fall 2018, 2019, 2020, 2021, 2022; Spring 2020, 2021, 2022, 2023)
- MATH 321-Linear Algebra I (Spring 2018, 2022)
- MATH 355-Engineering Mathematics (Fall 2019, 2021,2022)
- MATH 462-Engineering Numerical Analysis (Fall 2017, Spring 2020)
- MATH 464-Partial Differential Equations (Spring 2019, Spring 2023)
- MATH 466-Numerical Linear Algebra with Applications (course webpage, Spring 2020)

Graduate-level:
- MATH 501-Differential Equations and Fourier Analysis (Spring 2018, 2019, 2021)
- MATH 502-Advanced Calculus For Engineers (Spring 2023)
- MATH 552-Theory of Ordinary Differential Equations (Fall 2018)
- MATH 567-Numerical Methods for PDEs (course webpage, Summer 2019)

STUDENTS ADVISED at SIUE

- 2018-2019, Kelsey Cutler, Thesis Project Title: *Compare Methods for Improving FISTA Convergence in Optimization.*
- 2018-2019, Alexander Warthen, Senior Project Title: *FISTA for Computed Tomography and Image Deblurring.*
- 2017-2018, Breanna Guppy, Senior Project Title: *Filtered Back Projection vs Algebraic Iterative Reconstruction.*

REFEREED JOURNAL (J#) AND CONFERENCE (C#) PUBLICATIONS (after 2017)

J35 **Jun Liu** and Xiang-Sheng Wang, *Dynamic optimal allocation of medical resources: A case study of face masks during the first COVID-19 epidemic wave in the United States*, 2023, accepted by Mathematical Biosciences and Engineering. Arxiv link.

J34 Fermin S.V. Bazan, Luciano Bedin, Koung Hee Leem, **Jun Liu**, and George Pelekanos, *Fast matrix exponential-based quasi-boundary value methods for inverse space-dependent source problems*, **Networks and Heterogeneous Media**, 18(2), pp. 601-621, 2023. DOI link.

J33 Yi Jiang, **Jun Liu**, and Xiang-Sheng Wang, *A Direct Parallel-in-Time Quasi-Boundary Value Method for Inverse Space-Dependent Source Problems*, **Journal of Computational and Applied Mathematics**, 423, 114958 (19 pp), 2023. DOI link.

J32 Yunhui He and **Jun Liu**, Smoothing analysis of two robust multigrid methods for elliptic optimal control problems, accepted by **SIAM Journal on Matrix Analysis and Applications**, 2022. Arxiv link.

J31 Yi Jiang and **Jun Liu**, *Fast Parallel-in-Time Quasi-Boundary Value Methods for Backward Heat Conduction Problems*, **Applied Numerical Mathematics**, 184, pp. 325–339, 2022. DOI link.

J30 Yunhui He, **Jun Liu**, and Xiang-Sheng Wang, Optimized sparse approximate inverse smoothers for solving Laplacian linear systems, **Linear Algebra and Its Applications, 656, pp. 304–323**, 2023. DOI link.

J29 **Jun Liu** and Shu-Lin Wu, *Parallel-in-time preconditioners for the Sinc-Nyström method*, **SIAM Journal on Scientific Computing**, 44(4), A2386-A2411,2022. DOI link.

J28 Yunhui He and **Jun Liu**, A Vanka-type multigrid solver for complex-shifted Laplacian systems from diagonalization-based parallel-in-time algorithms, **Applied Mathematics Letters**, 132, 108125 (7 pp) 2022. DOI link.

J27 Weiwei Hu, **Jun Liu**, and Zhu Wang, *Bilinear Control of Convection-Cooling: From Open-Loop to Closed-Loop*, **Applied Mathematics and Optimization**, 86, 5 (33pp) ,2022. DOI link.

J26 **Jun Liu**, Xiang-Sheng Wang, Shu-Lin Wu, and Tao Zhou, *A well-conditioned direct PinT algorithm for first-and second-order evolutionary equations*, **Advances in Computational Mathematics**, 48,16(29pp), 2022. DOI link.

J25 **Jun Liu** and Zhu Wang, *A ROM-accelerated parallel-in-time preconditioner for solving all-at-once systems in unsteady convection-diffusion PDEs*, **Applied Mathematics and Computation**, 416, 126750(18pp), 2022. DOI link.

J24 Koung Hee Leem, **Jun Liu**, and George Pelekanos, *A numerical comparison of different qualitative algorithms for solving 2D inverse elastic scattering problems*, **Computational and Applied Mathematics**, 40(7), 243(23pp), 2021. DOI link.

J23 Ruimin Feng, **Jun Liu**, Michelle Bernhardt-Barry, and Shengnan Chen, *Transverse permeability measurements of gas shales under replicated in-situ flow conditions: Mathematical modeling and laboratory testing*, **Journal of Natural Gas Science and Engineering**, 95, 104159 (13pp) 2021. DOI link.

J22 Yi Jiang and **Jun Liu**, *A Numerical Study of Single Source Localization Algorithms for Phaseless Inverse Scattering Problems*, **Optimization and Engineering**, 22(4), pp. 2291–2319, 2021. DOI link.

J21 **Jun Liu**, Yan Qi, Na Cui, and Dave Bergner, *Optimized Route to Clear Diverging Diamond Interchange Using Discrete Optimization Method*, **Canadian Journal of Civil Engineering**, 48(11), pp. 1562–1570, 2021. DOI link.

J20 Zequan Li, Ruimin Feng, **Jun Liu** and Rohit Pandey, *A simplified transient technique for porosity and permeability determination in tight formations: numerical simulation and experimental validation*, **Energy Science & Engineering**, 9(3), pp. 375–389, 2021. DOI link.

J19 Ruimin Feng, **Jun Liu**, Yongming He, and Shengnan Chen, *Fast permeability measurements of tight and sorptive gas reservoirs using a radial-flow transient technique*, **Journal of Natural Gas Science and Engineering**, 84, 103673 (12pp), 2020. DOI link.

J18 **Jun Liu** and Shu-Lin Wu, *A fast block α-circulant preconditoner for all-at-once systems from wave equations*, **SIAM Journal on Matrix Analysis and Applications**, 41(4), pp. 1912–1943, 2020. DOI link.

J17 Weiwei Hu and **Jun Liu**, *Optimal Bilinear Control of a Reparable Multi-State System*, **International Journal of Control**, 95(4), pp. 851–866,2022. DOI link

J16 Shu-Lin Wu and **Jun Liu**, *A parallel-in-time block-circulant preconditioner for optimal control of wave equations*, **SIAM Journal on Scientific Computing**, 42(3), A1510-A1540, 2020. DOI link.

J15 He Yang and **Jun Liu**, *A qualitative deep learning method for inverse scattering problems*, **Applied Computational Electromagnetics Society Journal**, 35(2), pp. 153-160, 2020. DOI link.

J14 Koung Hee Leem, **Jun Liu**, and George Pelekanos, *An Extended Direct Factorization Method for Inverse Scattering with Limited Aperture Data*, **Inverse Problems in Science and Engineering**, 28(6), pp.754-776, 2020. DOI link

J13 **Jun Liu** and John W. Pearson, *Parameter-Robust Preconditioning for the Optimal Control of the Wave Equation*, **Numerical Algorithms**, 83, pp. 1171–1203, 2020. DOI link.

J12 **Jun Liu** and Mingqing Xiao, *The Quasi-Boundary Value Methods for Regularizing Backward Parabolic Equation under the Optimal Control Framework*, **Inverse Problems**, 35, 124003 (29pp), 2019. DOI link.

J11 Ruimin Feng, Shengnan Chen, Steven Bryant, and **Jun Liu**, *Stress-dependent permeability measurement techniques for unconventional gas reservoirs: Review, evaluation, and application*, **Fuel**, 256, 115987 (17pp), 2019. DOI link.

J10 Jianliang Tang, **Jun Liu**, and Mingqing Xiao, *Reconstruction of initial wave with radiation boundary condition via boundary sensing*, **Wave Motion**, 91, 102383 (12pp), 2019. DOI link

J9 **Jun Liu** and Xiang-Sheng Wang, *Numerical optimal control of a size-structured PDE model for metastatic cancer treatment*, **Mathematical Biosciences**, 314, pp. 28–42, 2019. DOI link

J8 **Jun Liu**, *Two Fast Finite Difference Schemes for Elliptic Dirichlet Boundary Control Problems*, **Journal of Applied Mathematics and Computing**, 61, pp. 481–503, 2019. DOI link.

J7 **Jun Liu** and Zhu Wang, *Non-commutative Discretize-then-Optimize Algorithms for Elliptic PDE-Constrained Optimal Control Problems*, **Journal of Computational and Applied Mathematics**, 362, pp. 596-613, 2019. DOI link.

J6 Koung Hee Leem, **Jun Liu**, and George Pelekanos, *An Adaptive Quadrature-based Factorization Method for Inverse Acoustic Scattering Problems*, **Inverse Problems in Science and Engineering**, 27 (3), pp. 299-316, 2019. DOI link.

J5 Koung Hee Leem, **Jun Liu**, and George Pelekanos, *Efficient Adaptive Qualitative Methods for 3D Inverse Scattering Problems*, **Applied Computational Electromagnetics Society Journal**, 33(10), pp. 1100–1105, 2018. DOI link

J4 Koung Hee Leem, **Jun Liu**, and George Pelekanos, *Two Direct Factorization Methods for Inverse Scattering Problems*, **Inverse Problems**, 34(12), 125004 (26pp), 2018. DOI link.

J3 Ruimin Feng, **Jun Liu**, Shengnan Chen, and Steven Bryan, *Effect of gas compressibility on permeability measurement in coalbed methane formations: experimental investigation and flow modeling*, **International Journal of Coal Geology**, 198, pp. 144–155, 2018. DOI link.

J2 William W. Hager, **Jun Liu**, Subhashree Mohapatra, Anil V. Rao, and Xiang-Sheng Wang, *Convergence Rate for a Gauss Collocation Method Applied to Constrained Optimal Control*, **SIAM Journal on Control and Optimization**, 56(2), pp. 1386–1411, 2018. DOI link.

J1 **Jun Liu** and Zhu Wang, *Efficient Time Domain Decomposition Algorithms for Parabolic PDE-Constrained Optimization Problems*, **Computers and Mathematics with Applications**, 75(6), pp. 2115-2133, 2018. DOI link.

C3 Weiwei Hu and **Jun Liu**, *Sampled-data based Failure Rate Identification for a Multi-state Reparable System*, Proceedings of the **59th IEEE Conference on Decision and Control (CDC)**, pp. 4442-4447, 2020. DOI link.

C2 William W. Hager, **Jun Liu**, Subhashree Mohapatra, Anil V. Rao, and Xiang-Sheng Wang, *A pseudospectral method for optimal control based on collocation at the Gauss points*, Proceedings of the **57th IEEE Conference on Decision and Control (CDC)**, pp. 2490–2495, 2018. DOI link.

C1 Koung Hee Leem, **Jun Liu**, and George Pelekanos, *An Adaptive Factorization Method for Inverse Scattering Problems*, Proceedings of **2018 International Applied Computational Electromagnetics Society (ACES)** Symposium, pp. 1-2, 2018. DOI link.

REFEREED JOURNAL AND CONFERENCE PUBLICATIONS (before 2017)

24. Buyang Li, **Jun Liu**, and Mingqing Xiao, *A New Multigrid Method for Unconstrained Parabolic Optimal Control Problems*, **Journal of Computational and Applied Mathematics**, 326, pp. 358–373, 2017.

23. Ruimin Feng, **Jun Liu**, and Satya Harpalani, *Optimized pressure pulse-decay method for laboratory estimation of gas permeability of sorptive reservoirs: Part 1: Background and numerical analysis*, **Fuel**, 191, pp. 555–564, 2017.

22. Ruimin Feng, Satya Harpalani, and **Jun Liu**, *Optimized pressure pulse-decay method for laboratory estimation of gas permeability of sorptive reservoirs: Part 2: Experimental study*, **Fuel**, 191, pp. 565–573, 2017.

21. **Jun Liu**, Brittany D. Froese, Adam M. Oberman, and Mingqing Xiao, *A multigrid scheme for 3D Monge-Ampère equations*, **International Journal of Computer Mathematics**, 94(9), pp. 1850–1866, 2017.

20. **Jun Liu** and Mingqing Xiao, *A Leapfrog Multigrid Algorithm for the Optimal Control of Parabolic PDEs with Robin Boundary Conditions*, **Journal of Computational and Applied Mathematics**, 307, pp. 216–234, 2016.

19. **Jun Liu**, Yu Huang, Haiwei Sun, and Mingqing Xiao, *Numerical methods for weak solution of wave equation with van der Pol type nonlinear boundary conditions*, **Numerical Methods for Partial Differential Equations**, 32(2), pp. 373–398, 2016.

18. **Jun Liu** and Mingqing Xiao, *A leapfrog semi-smooth Newton multigrid method for semilinear parabolic optimal control problems*, **Computational Optimization and Applications**, 63(1), pp. 69–95, 2016.

17. **Jun Liu** and Mingqing Xiao, *A new semi-smooth Newton multigrid method for control-constrained semi-linear elliptic PDE problems*, **Journal of Global Optimization**, 64(3), pp. 451–468, 2016.

16. Buyang Li, **Jun Liu**, and Mingqing Xiao, *A fast and stable preconditioned iterative method for optimal control problem of wave equations*, **SIAM Journal on Scientific Computing**, 37(6), pp. A2508–A2534, 2015.

15. **Jun Liu** and Haiwei Sun, *A fast high-order Sinc-based algorithm for pricing options under jump-diffusion processes*, **International Journal of Computer Mathematics**, 91(10), pp. 2163–2184, 2014.

14. Xuejun Gao, Tingwen Huang, Yu Huang, **Jun Liu**, and Mingqing Xiao, *Observer design for axial flow compressor*, **ASME Journal of Dynamic Systems, Measurement, and Control**, 136(5), 051017-1:12, 2014.

13. Spike T. Lee, **Jun Liu**, and Haiwei Sun, *Combined compact difference scheme for linear second-order partial differential equations with mixed derivative*, **Journal of Computational and Applied Mathematics**, 264, pp. 23–37, 2014.

12. **Jun Liu**, and Mingqing Xiao, *Rank-one characterization of joint spectral radius of finite matrix family*, **Linear Algebra and its Applications**, 438(8), pp. 3258–3277, 2013.

11. Xiongping Dai, Yu Huang, **Jun Liu**, and Mingqing Xiao, *The finite-step realizability of the joint spectral radius of a pair of d-by-d matrices one of which being rank-one*, **Linear Algebra and its Applications**, 437(7), pp. 1548–1561, 2012.

10. Xiaoshan Chen, Wen Li, Xiaojun Chen, and **Jun Liu**, *Structured backward errors for generalized saddle point systems*, **Linear Algebra and its Applications**, 436(9), pp. 3109–3119, 2012.

9. Liying Sun and **Jun Liu**, *Constraint preconditioning for nonsymmetric indefinite linear systems*, **Numerical Linear Algebra with Applications**, 17(4), pp. 677–689, 2009.

8. **Jun Liu**, Buyang Li, and Mingqing Xiao, *An Effective Computational Scheme for the Optimal Control of Wave Equations*, NOLCOS 2016, IFAC-PapersOnLine Vol. 49 (18), pp. 891–896, 2016.

7. Buyang Li, **Jun Liu**, and Mingqing Xiao, *Leapfrog multigrid methods for parabolic optimal control problems*, Proceedings of the 27th Chinese Control and Decision Conference, pp. 137–143, 2015. (Finalists for Zhang Si-Ying Outstanding Youth Paper Award).

6. **Jun Liu**, Tingwen Huang, and Mingqing Xiao, *A semismooth Newton multigrid method for constrained elliptic optimal control problems*, Advances in Global Optimization, Springer Proceedings in Mathematics & Statistics Vol. 95, pp. 397–405, 2015.

5. **Jun Liu** and Mingqing Xiao, *A new semi-smooth Newton multigrid method for parabolic PDE optimal control problems*, Proceedings of the 53rd IEEE Conference on Decision and Control, pp. 5568–5573, 2014.

4. **Jun Liu**, Yu Huang, Haiwei Sun, and Mingqing Xiao, *High-order numerical methods for wave equations with van der Pol type boundary conditions*, Proceedings of the SIAM Conference on Control and Its Applications, pp. 144–151, 2013.

3. **Jun Liu** and Mingqing Xiao, *Computation of joint spectral radius for network model associated with rank-one matrix set*, Neural Information Processing, Springer Lecture Notes in Computer Science, Vol. 7665, pp. 356–363, 2012.

2. Xuejun Gao, Tingwen Huang, **Jun Liu**, and Mingqing Xiao, *Local observer for axial flow aeroengine compressors*, Proceedings of the 10th World Congress on Intelligent Control and Automation, pp. 2233–2238, 2012.

1. **Jun Liu** and Haiwei Sun, *Sinc-Galerkin method for the option pricing under jump-diffusion model*, East-West Journal of Mathematics, pp. 317–327, 2009.

DISSERTATION AND (NON-REFEREED) RESEARCH REPORTS

- **Jun Liu**, *New Computational Methods for Optimal Control of Partial Differential Equations*, Ph.D. Dissertation, 150 pages, Southern Illinois University Carbondale, 2015. Download link.
- Bruce Bugbee, Brianna Cash, **Jun Liu**, Helen Parks, Wei Qi, Deling Wei, and Xi Zhang, *Uncertainty-enabled design of an active MEMS valve for a high-pressure micro gas analyzer*, Proceedings of the 18th Industrial Math and Statistical Modeling Workshop in Statistical and Applied Mathematical Sciences Institute (SAMSI), pp. 1–40, 2012.

RESEARCH PRESENTATIONS

- "Parallel-in-time preconditioners for the Sinc-Nyström systems", Invited Colloqium Talk (Online), Hong Kong Baptist University, Mar 16, 2023.
- "Direct Parallel in Time Solvers for Two Inverse PDE Problems", Invited Colloqium Talk (Online), Southwestern University of Finance and Economics, Dec 8, 2022.
- "Direct Parallel in Time Solvers for Two Inverse PDE Problems", Invited Colloqium Talk (Online), Foshan University, Nov 18, 2022.
- "Direct Parallel in Time Solvers for Two Inverse PDE Problems", Invited Colloqium Talk (Online), University of Louisiana at Lafayette, Nov 17, 2022.

- "Direct Parallel in Time Solvers for Inverse PDE Problems", Invited Seminar Talk (Online), Department of Mathematics, Purdue University, Mar 28, 2022.
- "A Well-Conditioned Direct Parallel-in-Time (PinT) Algorithm for Evolutionary Differential Equations", the 2021 Conference on Fast Direct Solvers (Online), Purdue University, Oct 24, 2021.
- "A Well-Conditioned Direct Parallel-in-Time (PinT) Algorithm for Evolutionary Differential Equations", the 6th Annual Meeting of SIAM Central States Section (Online), University of Kansas, Oct 3, 2021.
- "Fast Algorithms for Optimal Control of PDEs", Invited Colloquium Talk (Online), College of Mathematics and Information Science, Henan Normal University, Dec 30, 2020.
- "All-at-Once Preconditioners for Wave PDE and its Optimal Control Problem", Invited Colloquium Talk (Online), School of Mathematics and Statistics, Jiangsu Normal University, Dec 28, 2020.
- "Fast Algorithms for Optimal Control of PDEs", Invited Colloquium Talk (Online), Department of Mathematics and Statistics, Northeast Normal University, Nov 4, 2020.
- “Optimal control of a continuously size-structured model for the growth and treatment of metastatic cancer”, Invited Minisymposium Talk, The 1st Annual Meeting of SIAM Texas-Louisiana Section, October, 2018.
- “An Adaptive Factorization Method for Inverse Scattering Problems”, Colloquium Talk, Department of Mathematics and Statistics, Southern Illinois University Edwardsville (SIUE), April 6, 2018.
- “An Adaptive Factorization Method for Inverse Scattering Problems”, 2018 International Applied Computational Electromagnetics Society (ACES) Symposium, Denver, Colorado, USA, March 24-29, 2018.
- “Efficient Numerical Methods for PDE-Constrained Optimization”, Applied Mathematics Seminar Talk, Department of Mathematics, University of Louisiana at Lafayette, November, 2017.
- “Efficient Time Domain Decomposition Algorithms for PDE-constrained Optimization Problems”, Invited Minisymposium Talk, The 3rd Annual Meeting of SIAM Central States Section, Fort Collins, CO, October, 2017.

- “Efficient Time Domain Decomposition Algorithms for Time-dependent PDE-constrained Optimization Problems”, SIAM Conference on Control and Its Applications (CT17), Pittsburgh, PA, July, 2017.
- “Time domain decomposition algorithms for Parabolic PDE-Constrained Optimization”, Langenhop Lecture and Applied Mathematics Conference, Department of Mathematics, Southern Illinois University Carbondale, May, 2017.
- “Efficient Numerical Methods for PDE-Constrained Optimization Problems”, Applied and Computational Mathematics Seminar Talk, Department of Mathematics, University of South Carolina, April, 2017.
- “Efficient Iterative One-Shot Methods for PDE-Constrained Optimization”, Seminar Talk, Department of Mathematics and Statistics, Mississippi State University, Feburary, 2017.
- “From Real Analysis to Numerical Analysis”, Colloquium Talk, Department of Mathematics and Statistical Sciences, Jackson State University, Jackson, Mississippi, November, 2016.
- “Multilevel Discretize-then-Optimize Algorithms for PDE-Constrained Optimizations”, Invited Minisymposium Talk, The 2nd Annual Meeting of SIAM Central States Section, Little Rock, Arkansas, October, 2016.
- “New Second-order Time Schemes for Optimal Control of PDEs,” Poster Presentation, IMA Workshop on Computational Methods for Control of Infinite-dimensional Systems, March 14-18, 2016.
- “Iterative One-shot Methods for PDE-Constrained Optimization,” Colloquium Talk, Department of Mathematics, The University of Southern Mississippi, November, 2015.
- “A Fast Iterative Method for Optimal Control of Wave Equations,” Seminar Talk, Electrical and Computer Engineering Department, Southern Illinois University, April, 2015.

- "A Stable Leapfrog Scheme for Optimal Control of Wave Equations," The 1st Annual Meeting of SIAM Central States Section, Rolla, Missouri, April, 2015.
- "A New Semi-Smooth Newton Multigrid Method for Parabolic PDE Optimal Control Problems," The 53rd IEEE Conference on Decision and Control, Los Angeles, CA, December, 2014.
- "Multigrid method for Optimization Problems governed by Partial Differential Equations," Seminar Talk, Electrical and Computer Engineering Department, Southern Illinois University, October, 2014.
- "A Fast Leapfrog Scheme for the Numerical Solution of Parabolic Optimal Control Problems," The 34th Southeastern-Atlantic Regional Conference on Differential Equations, The University of Memphis, Memphis, October, 2014.
- "A New Semi-smooth Newton Multigrid Method for Parabolic PDE Optimal Control Problems," SIAM Annual Meeting, Chicago, Illinois, July, 2014.
- "A New Semi-Smooth Newton Multigrid Method for Control-Constrained Semi-Linear Elliptic PDE Problems," SIAM Conference on Optimization, San Diego, California, May, 2014.
- "High-Order Numerical Methods for Wave Equations with Van Der Pol Type Boundary Conditions," Session Chair, SIAM Conference on Control and Its Applications, San Diego, California, July, 2013.
- "Rank-one Characterization of Joint Spectral Radius," School of Mathematical Sciences, South China Normal University, Guangzhou, China, May, 2013.
- "Joint Spectral Radius of Finite Rank-One Matrix Family," SIAM Conference on Control and Its Applications, Baltimore, Maryland, July, 2011.

ACADEMIC HONORS AND TRAVEL AWARDS

- SIAM Early Career Travel Award for SIAM Conference on Control and Its Applications (CT17), July, 2017.
- IEEE Student Travel Award for the 53rd IEEE Conference on Decision and Control, December, 2014.
- Dissertation Research Assistantship Award, Southern Illinois University, 2014 Fall-2015 Spring (9 months).
- SIAM Student Travel Award for SIAM Conference on Optimization, May, 2014.
- Doctoral Fellowship Award, Southern Illinois University, 2013 Fall-2014 Summer (11 months).
- Excellence Award for Master's Thesis, South China Normal University, July, 2010.

PROFESSIONAL DEVELOPMENT (AS A PARTICIPANT)

- IMA Workshop: Stochastic Control, Computational Methods, and Applications, Minneapolis, MN, May 7 - 11, 2018.
- ICERM Research Experiences for Undergraduate Faculty (REUF), Providence, RI, June 26-30, 2017.
- NSF/CBMS: Nonlocal Dynamics: Theory, Computation and Applications, Chicago, IL, June 4-9, 2017.
- IMA New Directions Short Course: Mathematical Optimization, IMA, Minneapolis, August 1-12, 2016.
- AIM Research Experiences for Undergraduate Faculty (REUF) on the Mathematics of Data, Information Initiative at Duke (iiD), Duke University, Durham, July 18-22, 2016.
- IMA Workshop: Computational Methods for Control of Infinite-dimensional Systems, University of Minnesota, Minneapolis, March 14-18, 2016.
- XSEDE HPC workshop in Southern University at New Orleans, October 23-24, 2015.
- IMA New Directions Short Course: Topics in Control Theory, IMA, Minneapolis, May 27-June 13, 2014.
- SAMSI Industrial Math/Stat Modeling Workshop, North Carolina State University, Raleigh, July 16-24, 2012.
- Workshop on Computational Issues in Nonlinear Control, Monterey, California, November 7-8, 2011.

PROFESSIONAL SERVICE

- Organizer of the NSF-CBMS Conference: Computational Methods in Optimal Control, July 23-27, 2018.
- Advised 2 teams (6 students) to participate in 2017 COMAP's Mathematical Contest in Modeling (MCM).
- Committee Chair of the 2017 (37th) Annual Mathematics and Engineering Fair at Jackson State University.
- Referee for Mathematical Review (American Mathematical Society), 2013-present.
- Referee for the following international academic journals and conferences:

  - Mathematical Modelling and Analysis
  - SIAM Journal on Matrix Analysis and Applications
  - Mathematical Biosciences and Engineering,
  - Mechanical Systems and Signal Processing
  - Engineering Computations
  - SIAM Journal on Scientific Computing
  - Inverse Problems
  - Mathematics and Computers in Simulation
  - Computational & Applied Mathematics
  - Journal of Computational and Applied Mathematics
  - International Journal of Control
  - International Journal of Dynamics and Control
  - Computers & Mathematics with Applications
  - International Journal of Computer Mathematics
  - SIAM Conference on Control and Its Applications
  - American Control Conference
  - IFAC Symposium on Nonlinear Control Systems
  - Numerical Algorithms
  - Applied Mathematics Letters
  - Applied Numerical Mathematics
  - Optimal Control, Applications and Methods
  - Journal of Computational Physics
  - Applied Mathematics and Computation
  - Nonlinear Dynamics
  - Communications in Computational Physics (CiCP)
  - Optimization Letters
  - IEEE Transactions on Automatic Control
  - IEEE Transactions on Industrial Electronics
  - European Journal of Control
  - Nonlinear Analysis: Hybrid Systems
  - Cognitive Computation
  - IEEE Conference on Electromagnetic Field Computation
  - World Congress on Intelligent Control and Automation