Yunan Yang

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Cornell University
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Education

Ph.D. (2013 - 2018) Mathematics, The University of Texas at Austin
Advisor: Björn Engquist

B.S. (2009 - 2013) Mathematics and the Applied Mathematics, Zhejiang University

Professional Appointments

July 2023 —
Tenure-Track Goenka Family Assistant Professor, Department of Mathematics, Cornell University

January 2022 - June 2023
Advanced Fellow, Institute for Theoretical Studies, ETH Zurich, Switzerland

August 2021 - December 2021
Simons-Berkeley Research Fellow, Simons Institute for the Theory of Computing, Berkeley, CA

September 2018 - August 2021
Courant Instructor, Courant Institute of Mathematical Sciences, New York University, New York, NY

Honors and Prizes

19th IMA Leslie Fox Prize in Numerical Analysis (First Prize), 2019, UK

Selected Participant of the 7th Heidelberg Laureate Forum (HLF), 2019, Germany

Rising Stars in Computational and Data Sciences, 2019, Oden Institute, Austin, Texas

Frank Gerth III Dissertation Award, 2017-2018, the Department of Mathematics, UT-Austin

Professional Development Award, 2017, Office of Graduate Studies, UT-Austin

Research Grant and Travel Awards

Office of Naval Research Grant ONR-N00014-24-1-2088 (single PI), "Optimal Transport Based Strategies in Waves and Dynamics", 2024-2027

Summer Research in Mathematics (SRiM), Mathematical Sciences Research Institute (MSRI), 2021

National Science Foundation Grant DMS-1913129 (single PI), "An Optimal Transport based Multiscale Method for Inverse Problems", 2019-2022

Research Interests

Numerical Analysis, Computational Inverse Problems, Optimal Transport and Applications, Nonconvex Optimization, Machine Learning

Publications

Preprint

1. Botvinick-Greenhouse, J., Martin, R. and Yang, Y., 2024. Invariant Measures in Time-Delay Coordinates for Unique Dynamical System Identification. *arXiv preprint arXiv:2412.00589.*
2. Engquist, B., Ren, K. and Yang, Y., 2024. Sampling with Adaptive Variance for Multimodal Distributions. *arXiv preprint arXiv:2411.15220.*
3. Alaifari, R. and Yang, Y., 2024. Multi-Window Approaches for Direct and Stable STFT Phase Retrieval. *arXiv preprint arXiv:2410.05486.*
4. Li, Q., Oprea, M., Wang, L. and Yang, Y., 2024. Stochastic Inverse Problem: stability, regularization and Wasserstein gradient flow. *arXiv preprint arXiv:2410.00229.*
5. Botvinick-Greenhouse, J., Oprea, M., Maulik, R. and Yang, Y., 2024. Measure-Theoretic Time-Delay Embedding. *arXiv preprint arXiv:2409.08768.*
6. van Leeuwen, T. and Yang, Y., 2024. A data-driven approach to PDE-constrained optimization in inverse problems. *arXiv preprint arXiv:2403.15292.*
7. Liu, H., Nurbekyan, L., Tian, X. and Yang, Y., 2023. Adaptive Preconditioned Gradient Descent with Energy. *arXiv preprint arXiv:2310.06733.*
8. Engquist, B., Ren, K. and Yang, Y., 2022. An Algebraically Converging Stochastic Gradient Descent Algorithm for Global Optimization. *arXiv preprint arXiv:2204.05923*.
9. Yang, Y., 2019. Analysis and Application of Optimal Transport For Challenging Seismic Inverse Problems. *arXiv preprint arXiv:1902.01226.*

Refereed Journal Articles

10. Caflisch, R., and Yang, Y., 2024. Adjoint Monte Carlo Method. *To appear in Active Particles, Volume 4; arXiv preprint arXiv:2401.08361.*
11. Li, Q., Wang, L. and Yang, Y., 2024. Differential-Equation Constrained Optimization With Stochasticity. *SIAM/ASA Journal on Uncertainty Quantification, 12(2), pp.549-578.*
12. Einkemmer, L., Li, Q., Wang, L. and Yang, Y., 2024. Suppressing Instability in a Vlasov-Poisson System by an External Electric Field Through Constrained Optimization. *Journal of Computational Physics, 498, p.112662.*
13. Engquist, B., Ren, K. and Yang, Y., 2024. Adaptive State-Dependent Diffusion for Derivative-Free Optimization. *Communications on Applied Mathematics and Computation, 6(2), pp.1241-1269.*
14. Zhu, B., Hu, J., Lou, Y. and Yang, Y., 2023. Implicit regularization effects of the Sobolev norms in image processing. *La Matematica, pp.1-29*.

15. Botvinick-Greenhouse, J., Yang, Y., Maulik, R., Generative Modeling of Time-Dependent Densities via Optimal Transport and Projection Pursuit. *Chaos: An Interdisciplinary Journal of Nonlinear Science; 33 (10): 103108.*

16. Li, Q., Wang, L. and Yang, Y., 2023. Monte Carlo Gradient in Optimization Constrained by Radiative Transport Equation. *SIAM Journal on Numerical Analysis, 61(6), pp.2744-2774.*

17. Botvinick-Greenhouse, J., Martin, R. and Yang, Y., 2023. Learning dynamics on invariant measures using PDE-constrained optimization. *Chaos: An Interdisciplinary Journal of Nonlinear Science, 33(6).*

18. Yang, Y., Silantyev, D. and Caflisch, R., 2023. Adjoint DSMC for nonlinear spatially-homogeneous Boltzmann equation with a general collision model. *Journal of Computational Physics, p.112247.*

19. Han, R., Slepčev, D., Yang, Y., HV geometry for signal comparison. *Quarterly of Applied Mathematics. 82 (2024), pp. 391-430.*

20. Mahankali, S. and Yang, Y., 2023. Norm-dependent convergence and stability of the inverse scattering series for diffuse and scalar waves. *Inverse Problems, 39(5), p.054005.*

21. Nurbekyan, L., Lei, W. and Yang, Y., 2023. Efficient Natural Gradient Descent Methods for Large-Scale PDE-Based Optimization Problems. *SIAM Journal on Scientific Computing, 45(4), pp.A1621-A1655.*

22. Yang, Y., Nurbekyan, L., Negrini, E., Martin, R. and Pasha, M., 2023. Optimal transport for parameter identification of chaotic dynamics via invariant measures. *SIAM Journal on Applied Dynamical Systems, 22(1):269? 310, 2023.*

23. Frederick, C. and Yang, Y., 2022. Seeing through rock with help from optimal transport. *Snapshots of modern mathematics from Oberwolfach, Mathematisches Forschungsinstitut Oberwolfach, 2022-04.*

24. Engquist, B. and Yang, Y., 2022. Optimal transport based seismic inversion: Beyond cycle skipping. *Communications on Pure and Applied Mathematics, 75(10), pp.2201-2244.*

25. Yang, Y., Townsend, A. and Appelö, D., 2022. Anderson Acceleration Based on the $\mathcal{H}^{-s}$ Sobolev Norm for Contractive and Noncontractive Fixed-Point Operators. *Journal of Computational and Applied Mathematics, 403, p.113844.*

26. Dunlop, M. and Yang, Y., 2021. Stability of Gibbs Posteriors from the Wasserstein Loss for Bayesian Full Waveform Inversion. *SIAM/ASA Journal on Uncertainty Quantification, 9(4), pp.1499-1526.*

27. Caflisch, R., Silantyev, D. and Yang, Y., 2021. Adjoint DSMC for nonlinear Boltzmann equation constrained optimization. *Journal of Computational Physics, 439, p.110404.*

28. Yang, Y., 2021. Anderson acceleration for seismic inversion. *Geophysics, 86(1), pp.R99-R108.*

29. Engquist, B., Ren, K. and Yang, Y., 2020. The quadratic Wasserstein metric for inverse data matching. *Inverse Problems, 36(5), p.055001.*

30. Engquist, B. and Yang, Y., 2019. Seismic imaging and optimal transport. *Communications in Information and Systems, 19(2), pp.95-145.*

31. Engquist, B. and Yang, Y., 2019. Seismic inversion and the data normalization for optimal transport. *Methods and Applications of Analysis, 26(2), pp.133-148.*

32. Yang, Y. and Engquist, B., 2018. Analysis of optimal transport and related misfit functions in full-waveform inversion. *Geophysics, 83(1), pp.A7-A12.*

33. Yang, Y., Engquist, B., Sun, J. and Hamfeldt, B.F., 2018. Application of optimal transport and the quadratic Wasserstein metric to full-waveform inversion. *Geophysics, 83(1), pp.R43-R62.*

34. Engquist, B., Froese, B.D. and Yang, Y., 2016. Optimal transport for seismic full waveform inversion. *Communications in Mathematical Science, 14(8):2309-2330, 2016.*

Refereed Conference Proceedings

35. Wu C., Song R., Liu C., Yang, Y., Li, A., Huang, M. Geng T., 2024. NP-GL: Extending Power of Nature from Binary Problems to Real-World Graph Learning *The 12th International Conference on Learning Representations (ICLR) 2024.*

36. Molinaro, R., Yang, Y., Engquist, B. and Mishra, S., 2023. Neural Inverse Operators for Solving PDE Inverse Problems. *Proceedings of the 40th International Conference on Machine Learning (ICML), PMLR 202:25105-25139, 2023.*

37. Liu, Z., Yang, Y., Pan, Z., Sharma A., Hasan, A., Ding, C., Li A., Huang, M., and Geng, T., 2023. Ising-CF: A Pathbreaking Collaborative Filtering Method Through Efficient Ising Machine Learning. *The 60th Design Automation Conference (DAC).*

38. Yu, A., Yang, Y. and Townsend, A., 2023. Tuning Frequency Bias in Neural Network Training with Nonuniform Data. *The 11th International Conference on Learning Representations (ICLR) 2023.*

39. Engquist, B., Ren, K., Yang, Y., 2022, A Generalized Weighted Optimization Method for Computational Learning and Inversion. *The 10th International Conference on Learning Representations (ICLR) 2022.*

40. Yang, Y., 2020. Anderson acceleration for seismic inversion. *In SEG Technical Program Expanded Abstracts 2020 (pp. 880-884). Society of Exploration Geophysicists.*

41. Dunlop, M. and Yang, Y., 2020. New likelihood functions and level-set prior for Bayesian full-waveform inversion. *In SEG Technical Program Expanded Abstracts 2020 (pp. 825-829). Society of Exploration Geophysicists.*

42. Yang, Y. and Engquist, B., 2019. Improving optimal transport based FWI through data normalization. *In SEG Technical Program Expanded Abstracts 2019 (pp. 1315-1319). Society of Exploration Geophysicists.*

43. Yang, Y. and Engquist, B., 2018. Model recovery below reflectors by optimal-transport FWI. *In SEG Technical Program Expanded Abstracts 2018 (pp. 1178-1182). Society of Exploration Geophysicists.*

44. J. Ramos-Martínez, L. Qiu, J. Kirkebø, A.A. Valenciano, and Y. Yang, 2018. Long-wavelength FWI updates beyond cycle skipping. *In SEG Technical Program Expanded Abstracts 2018 (pp. 1168-1172). Society of Exploration Geophysicists.*

45. Yang, Y. and Engquist, B., 2017. Analysis of optimal transport and related misfit functions in full-waveform inversion. *In SEG Technical Program Expanded Abstracts 2017 (pp. 1291-1296). Society of Exploration Geophysicists.*

46. Qiu, L., Ramos-Martínez, J., Valenciano, A., Yang, Y. and Engquist, B., 2017. Full-waveform inversion with an exponentially encoded optimal-transport norm. *In SEG Technical Program Expanded Abstracts 2017 (pp. 1286-1290). Society of Exploration Geophysicists.*

47. Yang, Y., Engquist, B. and Sun, J., 2016. Convexity of the quadratic Wasserstein metric as a misfit function for full-waveform inversion. *In SEG Technical Program Expanded Abstracts 2016 (pp. 1385-1389). Society of Exploration Geophysicists.*

Book Chapter

48. Yang, Y. and Engquist, B., 2017. Analysis of optimal transport related misfit functions in seismic imaging. *In: Nielsen F., Barbaresco F. (eds) Geometric Science of Information. GSI 2017. Lecture Notes in Computer Science, vol 10589. Springer, Cham.*

Reviewing Activities

AAAI Conference on Artificial Intelligence

Cambridge University Press

Communications in Statistics - Theory and Methods

Communications in Computational Physics

Computers & Geosciences

Conference on Neural Information Processing Systems (NeurIPS)

European Research Council

Foundations of Data Science

GEM - International Journal on Geomathematics

Geophysics

Geophysical Journal International

Geophysical Prospecting

IEEE Transactions on Signal Processing

Information and Inference: A Journal of the IMA

International Conference on Learning Representations (ICLR)

International Conference on Machine Learning (ICML)

Inverse Problems and Imaging

Journal of Computational Physics

Journal of Geophysical Research - Solid Earth

Journal of Numerical Mathematics

Journal of Scientific Computing

Mathematical Association of America

Mathematical Reviews

National Science Foundation (US)

Natural Sciences and Engineering Research Council of Canada

Numerische Mathematik

Physica D: Nonlinear Phenomena

Research in the Mathematical Sciences

SIAM Journal on Applied Mathematics

SIAM Journal on Imaging Sciences

SIAM Journal on Numerical Analysis

SIAM Journal on Scientific Computing

Academic Services

April 2025
Co-organizer of Oberwolfach workshop *Computational Multiscale Methods*, Oberwolfach, Germany

April 2025
Co-organizer of *Frontiers in Computational Mathematics A conference in honor of Björn Engquist's 80th birthday*, UT Austin, Texas

January 2025
Co-organizer of IPAM workshop *Sampling, Inference, and Data-Driven Physical Modeling in Scientific Machine Learning*, UCLA, Los Angeles, USA

April 2024
Co-organizer of workshop *Women in Optimal Transport*, The Kantorovich Initiative, Vancouver, Canada

July/August 2023
Co-organizer of BIRS workshop *Applied and Computational Differential Geometry and Geometric PDEs*, Banff, Canada

June 2023
Co-organizer of the workshop *Emerging Topics in Applications of Optimal Transport*, Institute for Theoretical Studies, ETH Zurich, Switzerland

May 2023
External co-organizer of Frontiers in Applied and Computational Mathematics (FACM) Conference hosted at NJIT, New Jersey, USA

January 2023
Co-organizer of MSRI Special Session on Summer Research in Mathematics (SRiM): Applied and Computational Mathematics, at 2023 Joint Mathematics Meetings (JMM), Boston

October 2022
Co-organizer of BIRS workshop *New Ideas in Computational Inverse Problems*, Banff, Canada

Spring 2022
Master Student Mentor for the African Institute for Mathematical Sciences (AIMS) at Cameroon

March 2021 & March 2022
Panelist for Division of Mathematical Sciences (DMS), National Science Foundation (NSF)

Spring 2021 & Fall 2021
Assistant Research Professor Search Committee, Center for Data Science for Enterprise and Society (CDSES), Cornell University

Summer 2020 & Summer 2021
Academic mentor for Summer Undergraduate Research Experience (SURE) program, Mathematics Department, Courant Institutes of Mathematical Sciences, New York University

January 2020 - March 2021
Academic mentor for MIT PRIMES program

September 2020 - May 2021
Proud to Be First Advocate (supporting first-generation students), College of Arts and Science, NYU

May 2020
Organizer of mini-symposium *Optimal Transport and Data Fitting* at the SIAM Conference on Mathematics of Data Science 2020, Cincinnati, Ohio, USA

April 2020
Co-organizer of IPAM workshop *PDE and Inverse Problem Methods in Machine Learning*, UCLA

July 2019
Co-Organizer of mini-symposium *Optimal Transport for Nonlinear Problems* at the 9th International Congress on Industrial and Applied Mathematics (ICIAM), Valencia, Spain

March 2019
Co-organizer of mini-symposium *Optimal transport for imaging in geosciences* at the 2019 SIAM Conference on Mathematical & Computational Issues in the Geosciences, Houston, Texas, USA

September 2016 - May 2018
Co-organizer for Distinguished Women in Mathematics Lecture Series, Department of Mathematics, UT-Austin

January 2015 - May 2016
Co-organizer for Directed Reading Program, Department of Mathematics, UT-Austin

September 2014 - May 2016
Participating mentor for Directed Reading Program, Department of Mathematics, UT-Austin

Teaching Experience

Courses of Cornell University:

Spring 2024, Spring 2025: Applied Functional Analysis

Fall 2023, Fall 2024: Numerical Analysis and Differential Equations

Courses of New York University:

Fall 2020: Linear Algebra

Summer 2020: Numerical Analysis

Spring 2020: Calculus II

Spring & Fall 2019: Discrete Mathematics

Fall 2018: Mathematics for Economics I

Selective Presentations

Department Talks

October 2024 (hosted by Akwum Onwunta)
Industrial and Systems Engineering (ISE) Seminar, Lehigh University, Online

October 2024 (hosted by Rongjie Lai)
Center for Computational and Applied Mathematics (CCAM) Seminar, Department of Mathematics, Purdue University

May 2024 (hosted by Guanglian Li)
Numerical Analysis Seminar, Department of Mathematics, The University of Hong Kong, Online

April 2024 (hosted by Wenjun Zhao)
Pattern Theory Group Seminar, Division of Applied Mathematics, Brown University, RI

April 2024 (hosted by Youssef Marzouk)
Center for Computational Science & Engineering (CCSE) Distinguished Seminar, MIT, MA

November 2023 (hosted by Harbir Antil)
The Center for Mathematics and Artificial Intelligence Colloquium, George Mason University, VA

October 2023 (hosted by Nicolas Garcia Trillos)
Statistics Seminar, Department of Statistics, UW Madison

October 2023 (hosted by Hailiang Liu)
Computational and Applied Mathematics Seminar, Department of Mathematics, Iowa State University

October 2023 (hosted by Georg Stadler)
The Computational Mathematics and Scientific Computing seminar, Courant Institute, NYU

September 2023 (hosted by Anil Damle)
Scientific Computing and Numerics (SCAN) Seminar, Cornell University

April 2023 (hosted by Katerina Papagiannouli)
Statistical Learning Seminar, Max Planck Institute of Mathematics in the Science, Leipzig, Germany

February 2023 (hosted by Olga Mula)
Centre for Analysis, Scientific Computing and Applications (CASA) Colloquium, Eindhoven University of Technology

February 2023 (hosted by Thomasina Ball)
Applied Mathematics Seminar, The Mathematics Institute of the University of Warwick

November 2022 (hosted by Jeff Calder)
IMA Data Science Seminar, University of Minnesota

November 2022 (hosted by Marcus Webb)
Numerical Analysis and Scientific Computing (NASC) Seminar, University of Manchester

November 2022 (hosted by Aretha Teckentrup)
Maxwell Institute Applied and Computational Mathematics Seminar, University of Edinburgh

November 2022 (hosted by Ralf Hiptmair)
Zurich Colloquium in Applied and Computational Mathematics, ETH Zurich

August 2022 (hosted by Haizhao Yang)
PSU-Purdue-UMD Joint Seminar on Mathematical Data Science, Virtually Online

June 2022 (hosted by Andreas Krause)
Learning and Adaptive Systems Group Seminar, Department of Computer Science, ETH Zürich

May 2022 (hosted by Lisa Kreusser)
Applied and Interdisciplinary Mathematics Seminar Series, University of Bath, UK

March 2022 (hosted by Wuchen Li)
Optimal Transport and Mean Field Games Seminar, University of South Carolina

March 2022 (hosted by Andreas Fichtner)
Seismology and Wave Physics Seminar, Institute of Geophysics, ETH Zürich

March 2022 (hosted by François Bienvenu)
ITS Fellows? Seminar, Institute for Theoretical Studies, ETH Zürich

March 2022 (hosted by Guanglian Li)
Numerical Analysis Seminar, Department of Mathematics, The University of Hong Kong

February 2022 (hosted by Axel Turnquist)
Optimization & Machine Learning Seminar, Department of Mathematical Sciences, NJIT

February 2022 (hosted by Di Fang)
Applied Math Seminar, Department of Mathematics, University of California Berkeley

January 2022 (hosted by Franca Hoffmann)
Oberseminar Analysis, Hausdorff Center for Mathematics, University of Bonn, Germany

October 2021 (hosted by Xiaochuan Tian)
The Center for Computational Mathematics (CCoM) Seminar, University of California San Diego

July 2021 (hosted by Christian Kuehn)
Oberseminar Dynamics, Technical University of Munich, Germany

May 2021 (hosted by Yoonsang Lee)
Sea Ice Modeling and Data Assimilation Seminar, Department of Mathematics, Dartmouth College

March 2021 (hosted by Xiaojing Ye)
Colloquium, Department of Mathematics and Statistics, Georgia State University

March 2021 (hosted by Rongjie Lai)
Seminar on "Mathematics in Imaging, Data and Optimization", Department of Mathematical Science, Rensselaer Polytechnic Institute

February 2021 (hosted by Adrianna Gillman)
APPM Special Seminar, Department of Applied Mathematics, CU Boulder

February 2021 (hosted by L. Mahadevan)
Applied Math Seminar, Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS)

January 2021 (hosted by Felix Herrmann)
CSE Seminar, School of Computational Science & Engineering, Georgia Institute of Technology

January 2021 (hosted by Sivabal Sivaloganathan)
Applied Math Seminar, Department of Applied Mathematics, University of Waterloo

January 2021 (hosted by Fadil Santosa)
Special Seminar, Department of Applied Mathematics & Statistics, Johns Hopkins University

January 2021 (hosted by Andrew Stuart)
Frontiers in Computing and Mathematical Sciences, CMS, California Institute of Technology

January 2021 (hosted by Bernard Deconinck)
AMATH Seminar, Department of Applied Mathematics, University of Washington

December 2020 (hosted by Maria Cameron)
Seminar, Department of Mathematics, University of Maryland, College Park

November 2020 (hosted by Michael Vogelius)
Special Colloquium, Department of Mathematics, Rutgers

October 2020 (hosted by Wee Teck Gan)
Seminar, Department of Mathematics, National University of Singapore

October 2020 (hosted by Laurent Pascal Saloff-Coste)
Oliver Club (Department Colloquium), Department of Mathematics, Cornell University

September 2020 (hosted by Daniel Appelö)
Colloquium, CMSE, Michigan State University

April 2020 (hosted by Alex Townsend)
Scientific Computing and Numerics (SCAN) seminar, Department of Mathematics, Cornell University

October 2019 (hosted by Miao-Jung Yvonne Ou)
Inverse Problem and Analysis seminar, Department of Mathematical Sciences, University of Delaware

August 2019 (hosted by Zhennan Zhou)
Beijing International Center for Mathematical Research, Peking University, China

June 2019 (hosted by Gunther Uhlmann)
Jockey Club Institute for Advanced Study, the Hong Kong University of Science and Technology

June 2019 (hosted by Hao Wu)
Department of Mathematics, Tsinghua University, China

March 2019 (hosted by Daniel Appelö)
APPM Colloquium, Department of Applied Mathematics, University of Colorado, Boulder

November 2018 (hosted by Michael L. Overton)
Numerical Analysis and Scientific Computing Seminar, Courant Institute, New York University

October 2018 (hosted by Stanley Osher)
Computational Applied Mathematics (CAM), Department of Mathematics, UCLA

September 2018 (hosted by Simone Marras)
Department of Mechanical and Industrial Engineering, New Jersey Institute of Technology

August 2018 (hosted by Gunilla Kreiss)
Department of Information Technology, Uppsala University, Sweden

November 2017 (hosted by Jingwei Hu)
Center for Computational & Applied Mathematics, Department of Mathematics, Purdue University

May 2017 (hosted by Stanley Osher)
Computational Applied Mathematics (CAM), Department of Mathematics, UCLA

March 2017 (hosted by Kui Ren)
Numerical Analysis Seminar, ICES, University of Texas at Austin

February 2017 (hosted by Jean Virieux)
ISTerre Institute & LJK Laboratory, Université de Grenoble, France

January 2016 (hosted by Eric Chung)
Department of Mathematics, The Chinese University of Hong Kong

Conference and Workshop Talks

December 2024
Joint Meeting of the NZMS, AustMS and AMS, Special Session on Stochastic and Deterministic Inverse Problems, Auckland, New Zealand

November 2024
2024 SIAM NNP Sectional Meeting, Rochester Institute of Technology, NY

July 2024
ICERM Workshop on Empowering a Diverse Computational Mathematics Research Community, Brown University, RI

June 2024
Institute for Mathematical and Statistical Innovation (IMSI) Workshop on Mathematical and Statistical Foundations of Digital Twins, Chicago, IL

May 2024
Mini-Tutorial Speaker, SIAM Conference on Imaging Sciences 2024, Atlanta, GA

May 2024
ICERM Workshop on Interacting Particle Systems: Analysis, Control, Learning and Computation, Brown University, RI

April 2024
International Conference on Multiscale Modeling and Simulation based on Physics and Data, IPAM, UCLA

February 2023
Brin Mathematics Research Center (MRC) Workshop on Scientific Machine Learning: Theory and Algorithms, University of Maryland

December 2023
IAS Workshop on Inverse Problems, Imaging and Partial Differential Equations, Jockey Club Institute for Advanced Study, The Hong Kong University of Science and Technology

October 2023
IMA Workshop "New Trends in Kinetic and Optimal Transport Schedule", UMN Twin Cities

October 2023
The First SIAM New York-New Jersey-Pennsylvania Section Meeting, NJIT

September 2023
The 11th Applied Inverse Problems (AIP), Göttingen, Germany

August 2023
BIRS Workshop "Applied and Computational Differential Geometry and Geometric PDEs", Banff, Canada

July 2023
ICERM Workshop "Acceleration and Extrapolation Methods", Providence, RI

June 2023
BIRS Workshop "Scientific Machine Learning", Banff, Canada

May 2023
MS1: Inverse Problems and Imaging, Frontiers in Applied and Computational Mathematics (FACM) Conference hosted at NJIT, New Jersey, USA

March 2023
HKUST IAS Program on Inverse Problems, Imaging and Partial Differential Equations, Virtually Online

March 2023
Workshop "Purpose-driven particle systems", Lorentz Center, Leiden, Netherlands

January 2023
Warwick MIRaW Day on Optimal Transport and Machine Learning, University of Warwick

December 2022
IPAM Hamilton–Jacobi Reunion Conference II, UCLA Lake Arrowhead Conference Center

October 2022
Asilomar Conference on Signals, Systems, and Computers, Virtually Online

September 2022
The Third Symposium on Machine Learning and Dynamical Systems, Fields Institute, Toronto, Canada

September 2022
Junior Researcher Meeting on Forward and Inverse Kinetic Theory and Related Topics, UW Madison

September 2022
Challenges in Numerical Analysis and Scientific Computing, University of Minho, Braga, Portugal

July 2022
MS130, 2022 SIAM Annual Meeting (AN22), Virtually Online

June 2022
Conference Celebrating 30th Birthday of Acta Numerica, Banach Center, Będlewo, Poland

June 2022
Workshop "Synergies between Data Science and PDE Analysis", Hausdorff Center for Mathematics, Bonn, Germany

May 2022
Workshop on PDE Methods in Data Science and Machine Learning, Focus Program on Data Science, Approximation Theory, and Harmonic Analysis, The Fields Institute, Toronto, Canada

May 2022
Workshop "Frontiers in numerical analysis of kinetic equations", Frontiers in kinetic theory: connecting microscopic to macroscopic scales, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK

December 2021
Optimal Transport and Machine Learning (OTML), NeurIPS 2021 Workshop, Virtually Online

December 2021
BIRS Workshop"Women in Inverse Problems", Virtually Online

October 2021
Workshop "Dynamics and Discretization: PDEs, Sampling, and Optimization", semester-long program "Geometric Methods in Optimization and Sampling", Simons Institute for the Theory of Computing

September 2021
Minisymposium "Recent Progress of Classical and Deep Learning Methods in Inverse Problems and Imaging" at the 44th SIAM Southeastern Atlantic Section Conference (SIAM-SEAS)

July 2021
CP13, 2021 SIAM Annual Meeting (AN21), Virtually Online

June 2021
MS17 & MS27, SIAM Conference on Mathematical & Computational Issues in the Geosciences (GS21), Virtually Online

June 2021
Workshop "Recent Development in Numerical Kinetic Theory", Virtually Online

June 2021
BIRS Workshop"Entropic Regularization of Optimal Transport and Applications", Virtually Online

May 2021
CP3, SIAM Conference on Applications of Dynamical Systems (DS) 2021, Virtually Online

May 2021
Invited Speaker, Imaging & Inverse Problems (IMAGINE) OneWorld SIAM-Imaging Science Seminar

March 2021
Minisymposium, SIAM Conference on Computational Science and Engineering (CSE) 2021

February 2021
Oberwolfach Workshop "Applications of Optimal Transportation in the Natural Sciences", MFO (Oberwolfach Research Institute for Mathematics)

November 2020
IMA Workshop "Optimal Control, Optimal Transport, and Data Science"

May 2020
MSRI Workshop "Hot Topics: Optimal transport and applications to machine learning and statistics"

April 2020
IPAM Workshop "PDE and Inverse Problem Methods in Machine Learning"

July 2019
Oberwolfach Workshop "Computational Multiscale Methods", MFO, Germany

July 2019
The 9th International Congress on Industrial and Applied Mathematics (ICIAM), Valencia, Spain

June 2019
28th Biennial Numerical Analysis Conference, Glasgow, UK

June 2019
The 8th International Congress of Chinese Mathematicians (ICCM 2019), Beijing, China

May 2019
BIRS Workshop"Women In Numerical Methods for PDEs and their Applications", Banff, Canada

April 2019
Rising Stars in Computational and Data Sciences Workshop, ICES, The University of Texas at Austin

March 2019
SIAM Conference on Mathematical & Computational Issues in the Geosciences (GS19), Houston, Texas

October 2018
Ki-Net/CSCAMM Young Researchers Workshop, University of Maryland, College Park

July 2018
2018 SIAM Annual Meeting, Portland, Oregon

November 2017
3rd conference on Geometric Science of Information, Paris, France

June 2017
Annual Conference on Frontiers in Applied and Computational Mathematics (FACM '17), NJIT

May 2017
Applied Inverse Problems conference (AIP 2017), Zhejiang University, China

May 2017
IPAM Program *Computational Issues in Oil Field Applications*, UCLA

February 2017
Hausdorff Trimester Program *Multiscale Problems: Algorithms, Numerical Analysis and Computation*, Bonn University, Germany

July 2016
2016 SIAM Annual Meeting, Boston

January 2016
Computational Seismology Workshop in Tsinghua Sanya International Mathematics Forum, China

Posters

Molinaro, R., Yang, Y., Engquist, B. and Mishra, S., Neural Inverse Operators for Solving PDE Inverse Problems. *The International Conference on New Trends in Computational and Data Sciences December 19-21, 2022, California Institute of Technology, Pasadena, California, USA*

Yang, Y., Engquist, B., Optimal Transport for Seismic Inversion —- an Idea to Tackle the Nonlinearity. *Celebrating 75 Years of Mathematics of Computation ICERM workshop, November, 2018*

Yang, Y., Engquist, B., Sun, J. and Froese, B.D., Application of Optimal Transport and the Quadratic Wasserstein Metric to Full-Waveform Inversion. *2017 SIAM Conference on Computational Science and Engineering*

Yang, Y. and Engquist, B., The Wasserstein distance applied to seismic inversion and registration, *ICIAM 2015*

Yang, Y. and Engquist, B., The Wasserstein distance applied to seismic inversion and registration, *2015 SIAM Conference on Mathematical & Computational Issues in the Geosciences*

Academic Experience

April 2022 - June 2022
Visiting Scholar, Research Program *Kinetic Theory: old and new tutorial* at the Isaac Newton Institute for Mathematical Sciences, Cambridge, United Kingdom

March 2017 - June 2017
Visiting Scholar, IPAM Program *Computational Issues in Oil Field Applications*, UCLA

January 2017 - February 2017
Visiting Scholar, Hausdorff Trimester Program *Multiscale Problems: Algorithms, Numerical Analysis and Computation*, Bonn University, Germany

January 2015 - May 2017
Graduate Research Assistant, The Institute for Computational Engineering and Sciences, UT-Austin