

CURRICULUM VITAE – ANDREAS MANG

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APPOINTMENTS

2023–present	Associate Professor	Department of Mathematics, University of Houston
2017–2023	Assistant Professor	Department of Mathematics, University of Houston

OTHER POSITIONS & ACTIVITIES

Co-Chair of SIAM Conference on Mathematics of Data Science Conference 2026
Long Term Visitor at Institute for Computational and Experimental Research in Mathematics 2026
SIAM Coordinating Committee Member for Joint Mathematics Meetings 2026

EDUCATION

University of Texas at Austin, TX, US	Computational Sciences & Engineering	Postdoc 2013–2017
University of Lübeck, Lübeck, DE	Computational Sciences & Engineering	Ph.D. (Dr.-Ing.) 2013

PUBLICATIONS

Selected Journal Articles

17. Y. Su, B. Geiger, I. Timofeyev, **A. Mang** & R. Azencott. *Rare events analysis and computation for stochastic evolution of bacterial populations*. *Stochastic Analysis and Applications* 43(1):1–29, 2025.
arXiv:[2308.14135](https://arxiv.org/abs/2308.14135) doi:[10.1080/07362994.2024.2422913](https://doi.org/10.1080/07362994.2024.2422913)
16. H. Dabirian, R. Sultamuratov, J. Herring, C. El Tallawi, W. Zoghbi, **A. Mang** & R. Azencott. *Classification of deformable smooth shapes through geodesic flows of diffeomorphisms*. *Journal of Mathematical and Imaging Vision* 66:1033–1059, 2024.
arXiv:[2307.10114](https://arxiv.org/abs/2307.10114) doi:[10.1007/s10851-024-01211-z](https://doi.org/10.1007/s10851-024-01211-z)
15. **A. Mang**, J. He & R. Azencott. *An operator-splitting approach for variational optimal control formulations for diffeomorphic shape matching*. *Journal of Computational Physics* 493:112463, 2023.
arXiv:[arXiv:2307.10114](https://arxiv.org/abs/2307.10114) doi:[10.1016/j.jcp.2023.112463](https://doi.org/10.1016/j.jcp.2023.112463)
14. P. Zhang, **A. Mang**, J. He, R. Azencott, K. C. El-Tallawi & W. A. Zoghbi. *Diffeomorphic shape matching by operator splitting in 3D cardiology imaging*. *Journal of Optimization Theory and Applications*, 188:143–168, 2021.
arXiv:[2011.10165](https://arxiv.org/abs/2011.10165) doi:[10.1007/s10957-020-01789-5](https://doi.org/10.1007/s10957-020-01789-5)
13. M. Brunn, N. Himthani, G. Biros, M. Mehl & **A. Mang**. *Fast GPU 3D diffeomorphic image registration*. *Journal of Parallel and Distributed Computing*, 149:149–162, 2021.
arXiv:[2004.08893](https://arxiv.org/abs/2004.08893) doi:[10.1016/j.jpdc.2020.11.006](https://doi.org/10.1016/j.jpdc.2020.11.006)
12. **A. Mang**, S. Bakas, S. Subramanian, G. Biros & C. Davatzikos. *Integrated biophysical modeling and image analysis: Application to neuro-oncology*. *Annual Review of Biomedical Engineering*, 22:309–341, 2020.
arXiv:[2002.09628](https://arxiv.org/abs/2002.09628) doi:[10.1146/annurev-bioeng-062117-121105](https://doi.org/10.1146/annurev-bioeng-062117-121105)

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11. K. Scheufele, S. Subramanian, **A. Mang**, G. Biros & M. Mehl. *Image-driven biophysical tumor growth model calibration*. SIAM Journal on Scientific Computing, 42(3):B549–B580, 2020.
arXiv:[1907.07774](#) doi:[10.1137/19M1275280](#)
 10. **A. Mang**, A. Gholami, C. Davatzikos & G. Biros. *CLAIRE: A distributed-memory solver for constrained large deformation diffeomorphic image registration*. SIAM Journal on Scientific Computing, 41(5):C548–C584, 2019.
arXiv:[1808.04487](#) doi:[10.1137/18M1207818](#)
 9. K. Scheufele, **A. Mang**, A. Gholami, C. Davatzikos, G. Biros & M. Mehl. *Coupling brain-tumor biophysical models and diffeomorphic image registration*. Computer Methods in Applied Mechanics and Engineering, 237:533–567, 2019.
arXiv:[1710.06420](#) doi:[10.1016/j.cma.2018.12.008](#)
 8. **A. Mang**, A. Gholami, C. Davatzikos & G. Biros. *PDE-constrained optimization in medical image analysis*. Optimization and Engineering, 19(3):765–812, 2018.
arXiv:[1803.00058](#) doi:[10.1007/s11081-018-9390-9](#)
 7. **A. Mang** & G. Biros. *A semi-Lagrangian two-level preconditioned Newton–Krylov solver for constrained diffeomorphic image registration*. SIAM Journal on Scientific Computing, 39(6):B1064–B1101, 2017.
arXiv:[1604.02153](#) doi:[10.1137/16M1070475](#)
 6. **A. Mang** & L. Ruthotto. *A Lagrangian Gauss–Newton–Krylov solver for intensity- and mass-preserving diffeomorphic image registration*. SIAM Journal on Scientific Computing, 39(5):B860–B885, 2017.
arXiv:[1703.04446](#) doi:[10.1137/17M1114132](#)
 5. **A. Mang** & G. Biros. *Constrained H^1 -regularization schemes for diffeomorphic image registration*. SIAM Journal on Imaging Sciences, 9(3):1154–1194, 2016.
arXiv:[1503.00757](#) doi:[10.1137/15M1010919](#)
 4. A. Gholami, **A. Mang** & G. Biros. *An inverse problem formulation for parameter estimation of a reaction-diffusion model for low grade gliomas*. Journal on Mathematical Biology, 72(1):409–433, 2016.
arXiv:[1408.6221](#) doi:[10.1007/s00285-015-0888-x](#)
 3. **A. Mang** & G. Biros. *An inexact Newton–Krylov algorithm for constrained diffeomorphic image registration*. SIAM Journal on Imaging Sciences, 8(2):1030–1069, 2015.
arXiv:[1408.6299](#) doi:[10.1137/140984002](#)
 2. T. A. Schuetz, **A. Mang**, S. Becker, A. Toma & T. M. Buzug. *Identification of crucial parameters in a mathematical multiscale model of glioblastoma growth*. Computational Mathematics and Methods in Medicine, 2014(2014):437094, 2014.
doi:[10.1155/2014/437094](#)
 1. **A. Mang**, A. Toma, T. A. Schuetz, S. Becker, C. Mohr, T. Eckey, D. Petersen & T. M. Buzug. *Biophysical modeling of brain tumor progression: From unconditionally stable explicit time integration to an inverse problem with parabolic PDE constraints for model calibration*. Medical Physics, 39(7):4444–4460, 2012.
doi:[10.1118/1.4722749](#)

Selected Conference Contributions

8. M. Brunn, N. Himthani, G. Biros, M. Mehl & **A. Mang**. *Multi-node multi-GPU diffeomorphic image registration for large-scale imaging problems*. Proc ACM/IEEE Conference on Supercomputing, pp.

523–539, 2020.

arXiv:[2008.12820](https://arxiv.org/abs/2008.12820) doi:[10.1109/SC41405.2020.00042](https://doi.org/10.1109/SC41405.2020.00042)

7. A. Gholami, **A. Mang**, K. Scheufele, C. Davatzikos, M. Mehl & G. Biros. *A framework for scalable biophysics-based image analysis*. Proc ACM/IEEE Conference on Supercomputing, 19:1–19:13, 2017. doi:[10.1145/3126908.3126930](https://doi.org/10.1145/3126908.3126930)
6. **A. Mang**, A. Gholami & G. Biros. *Distributed-memory large-deformation diffeomorphic 3D image registration*. Proc ACM/IEEE Conference on Supercomputing, pp. 842–853, 2016. arXiv:[1608.03630](https://arxiv.org/abs/1608.03630) doi:[10.1109/SC.2016.71](https://doi.org/10.1109/SC.2016.71)
5. **A. Mang**, T. A. Schuetz, S. Becker, A. Toma & T. M. Buzug. *Cyclic numerical time integration in variational non-rigid image registration based on quadratic regularisation*. Proc Vision Modeling and Visualization Workshop, pp. 143–150, 2012. doi:[10.2312/PE/VMV/VMV12/143-150](https://doi.org/10.2312/PE/VMV/VMV12/143-150)
4. A. Toma, A. Régnier-Vigouroux, **A. Mang**, S. Becker, T. A. Schuetz & T. M. Buzug. *In-silico modelling of tumour-immune system interactions for glioblastomas*. Proc International Conference on Mathematical Modeling, pp. 1237–1242, 2012. doi:[10.3182/20120215-3-AT-3016.00219](https://doi.org/10.3182/20120215-3-AT-3016.00219)
3. T. A. Schuetz, S. Moeller, S. Becker, **A. Mang** & A. Toma. *A cross-scale model of tumor growth: Do we need to model molecular interactions in separate artificial compartments within a cell?* Proc International Conference on Mathematical Modeling, pp. 1294–1299, 2012. doi:[10.3182/20120215-3-AT-3016.00230](https://doi.org/10.3182/20120215-3-AT-3016.00230)
2. T. A. Schuetz, S. Becker, **A. Mang**, A. Toma & T. M. Buzug. *A computational multiscale model of glioblastoma growth: Regulation of cell migration and proliferation via microRNA-451, LKB1 and AMPK*. Proc International Conference of the IEEE Engineering and Medicine in Biology Society, pp. 6620–6623, 2012. doi:[10.1109/EMBC.2012.6347512](https://doi.org/10.1109/EMBC.2012.6347512)
1. A. Toma, **A. Mang**, T. A. Schuetz, S. Becker & T. M. Buzug. *Is it necessary to model the matrix degrading enzymes for simulating tumour growth?* Proc Vision Modeling and Visualization Workshop, pp. 361–368, 2011. doi:[10.2312/PE/VMV/VMV11/361-368](https://doi.org/10.2312/PE/VMV/VMV11/361-368)

Refereed Book Chapters

1. **A. Mang**. *CLAIRE: Scalable GPU-accelerated algorithms for diffeomorphic image registration in 3D*. In: Foucart, S., Wojtowysch, S. (eds), *Applied and Numerical Harmonic Analysis: Explorations in the Mathematics of Data Science*, pp. 167–215, 2024. arXiv:[arXiv:2401.17493](https://arxiv.org/abs/2401.17493) doi:[10.1007/978-3-031-66497-7_8](https://doi.org/10.1007/978-3-031-66497-7_8)

Books

1. **A. Mang**. *Methoden zur numerischen Simulation der Progression von Gliomen: Modellentwicklung, Numerik und Parameteridentifikation*. Springer, 2014. doi:[10.1007/978-3-658-05246-1](https://doi.org/10.1007/978-3-658-05246-1)

Selected Other Publications

1. S. Bakas, M. Reyes, A. Jakab, S. Bauer, M. Rempfler, et al. *Identifying the best machine learning algorithms for brain tumor segmentation, progression assessment, and overall survival prediction in the BRATS challenge*. arXiv preprint, 2019 (49 pages).
arXiv:[1811.02629](https://arxiv.org/abs/1811.02629)

EXTRAMURAL FUNDING

Awarded Research Grants

- **CAREER: Scalable Algorithms for nonlinear, large-scale inverse problems governed by dynamical systems** ([DMS 2145845](#)).
Funding Agency: National Science Foundation (NSF; Division of Mathematical Sciences) | *Program:* Computational Mathematics (program solicitation NSF 20-525) | *PI:* A. Mang (UHouaton; Single Investigator) | *Awarded Funds:* ~\$100K/year for 5 years (total: ~\$500K) | *Funding Period:* 08/01/2022 – 07/31/2027.
- **Analysis and simulation of extremes and rare events in complex systems** ([DMS 2009923](#)).
Funding Agency: National Science Foundation (NSF; Division of Mathematical Sciences) | *Program:* Applied Mathematics (program solicitation PD 16-1266) | *PI:* M. Nicol (UHouaton) | *Co-PIs:* R. Azencott (UHouaton), A. Mang (UHouaton) | *Awarded Funds:* ~\$120K/year for 3 years (total: ~\$370K) | *Funding Period:* 07/15/2020 – 06/30/2023.
- **Fast algorithms for nonlinear optimal control of geodesic flows of diffeomorphisms** ([DMS 2012825](#)).
Funding Agency: National Science Foundation (NSF; Division of Mathematical Sciences) | *Program:* Computational Mathematics (program solicitation PD 16-127) | *PI:* A. Mang (UHouaton; Single Investigator) | *Awarded Funds:* ~\$95K/year for 3 years (total: ~\$300K) | *Funding Period:* 07/01/2020 – 06/30/2023.
- **Data mining for large data sets of shape deformations** ([DMS 1854853](#)).
Funding Agency: National Science Foundation (NSF; Division of Mathematical Sciences) | *Program:* Computational and Data-Enabled Science and Engineering in Mathematical and Statistical Sciences (CDS&E-MSS; program solicitation PD 16-8069) | *PI:* R. Azencott (UHouaton) | *Co-PI:* J. He (UHouaton), A. Mang (UHouaton) | *Awarded Funds:* ~\$133K/year for 3 years (total: ~\$400K) | *Funding Period:* 08/01/2019 – 07/31/2022.
- **Integrated methods for data analytics and inversion in image computing** ([#586055](#)).
Sponsor: Simons Foundation | *Program:* Mathematics and Physical Sciences—Collaboration Grants for Mathematicians | *PI:* A. Mang (UHouaton; Single Investigator) | *Awarded Funds:* \$8,400/year for 5 years (total: \$42K) | *Funding Period:* 09/01/2018 – 08/31/2019 (award expired due to NSF DMS-1854853).

Awarded Workshop Proposals

- **Integrating data- and physics-driven methods for decision making under uncertainty** ([26w5632](#)).
Sponsor: BIRS | *Type:* BIRS Workshop (26w5632) | *Organizers:* T. Bui-Thanh (UTAustin); A. Mang (UHouaton); L. Leticia Ramirez Ramirez (CIMAT); R. White (Sandia) | *Proposed Workshop Date:* 4/2026.
- **Research at the interface of applied mathematics and machine learning** ([DMS 2430460](#)).
Type: NSF-CBMS Regional Research Conferences in the Mathematical Sciences | *Funding Agency:* National Science Foundation (NSF; Division of Mathematical Sciences) | *Program:* NSF-CBMS Regional Research Conferences in the Mathematical Sciences (program solicitation NSF 19-539) | *PI:* Y. He (UHouaton) | *Co-PIs:* L. Cappanera (UHouaton); A. Mang (UHouaton); M. Wang (UHouaton) | *Awarded Funds:* \$42K | *Proposed Workshop Date:* 12/2025.

- **Inverse biophysical modeling and machine learning (23022).**

Type: Dagstuhl Seminar | Organizers: G. Biroš (UTAustin); A. Mang (UHouston); M. Schulte (US-tuttgart); B. Menze (UZuerich) | Venue: Schloss Dagstuhl, Leibniz-Center for Informatics, 66687 Wadern, DE | Workshop Date: 01/08/2023–01/13/2023.

AWARDS & HONORS (selected)

- **Award for Excellence in Research, Scholarship and Creative Activity** 2023
Division of Research, University of Houston.
- **NSM Junior Faculty Award for Excellence in Research** 2022
College of Natural Sciences and Mathematics, University of Houston.
- **NSF CAREER Award** 2022
National Science Foundation, Division of Mathematical Sciences.
- **SC17 Best Student Paper Award** 2017
Publication: A framework for scalable biophysics-based image analysis | Authors: A. Gholami, A. Mang, K. Scheufele, C. Davatzikos, M. Mehl & G. Biroš | Venue: International Conference for High Performance Computing, Networking, Storage and Analysis, Denver, CO, USA | Role: Co-Author.

INVITED & CONTRIBUTED TALKS (selected)

54. *Fast algorithms for inverse transport problems.* Invited talk (host: I. Tomas) at Department of Mathematics & Statistics, Texas Tech University, Lubbock, TX, US, 2025.
53. *A generalized alternating nonlinear GMRES acceleration method.* Contributed talk at at SIAM Texas-Louisiana Sectional Meetings (SIAM TX-LA;; Session: *High-Performance Solvers and Rapid PDE-Constrained Optimization*), University of Texas at Austin, Austin, TX, US, 2025.
52. *CLAIRE: Constrained large deformation diffeomorphic image registration.* Contributed talk at International Conference on Continuous Optimization (ICCOPT; Session: *Recent Advances on PDE-constrained optimization packages and libraries*), University of Southern California, Los Angeles, CA, US, 2025.
51. *Data- and model-driven approaches for solving inverse problems.* Invited talk (hosts: D. Mishra (TAMU), M. Zhong (UH), X. Chen (TAMU), D. Casey (TAMU)) at the Scientific Machine Learning (SciML) Summer School 2025 at the Institute of Data Science, Texas AM, College Station, TX, US, 2025.
50. *Bayesian inference for large scale inverse problems governed by hyperbolic dynamical systems.* Contributed talk at SIAM Conference on Computational Sciences and Engineering (CSE 25; Session: *Investigating Inverse Problems using Bayesian Inference: Challenges and Advances*); Fort Worth, TX, US, 2025.
49. *Efficient numerical methods for inverse problems governed by transport equations.* Contributed talk at 3rd IACM Digital Twins in Engineering Conference (DTE 2025) & 1st ECCOMAS Artificial Intelligence and Computational Methods in Applied Science (AICOMAS 2025), SIAM Conference on Mathematics of Data Science (DTE & AICOMAS 25; Session: *Inverse Problems and Data Assimilation for Digital Twins*); Paris, FR, 2025.
48. *Deep learning for Bayesian inverse problems governed by nonlinear ODEs.* Contributed talk at SIAM Conference on Mathematics of Data Science (MDS24; Session: *Recent Advances in Scientific Deep Learning*); Atlanta, GA, US, 2024.

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47. *Fast iterative methods for large-scale initial value control problems*. Contributed talk at the Modeling and Optimization: Theory and Applications (MOPTA; Session: *Computational and Theoretical Methods for High-dimensional Optimization Problems*), Bethlehem, PA, US, 2024.
 46. *CLAIRE: Scalable algorithms for diffeomorphic image registration*. Contributed talk at the SIAM Conference on Imaging Sciences (IS24; Session: *Model- and Data-Driven Approaches in Motion Analysis*), Atlanta, US, 2024.
 45. *Fast iterative solvers for initial value control problems with application to diffeomorphic image registration*. Contributed talk at the INFORMS Optimization Society Conference (IOS; Session: *Optimization of Complex Physics-Based Systems*), Houston, TX, 2024.
 44. *CLAIRE: Scalable algorithms for diffeomorphic image registration*. Contributed talk at the SIAM Conference on Uncertainty Quantification (UQ24; Session: *Computational Tools for Large-Scale Inverse Problems and UQ*), Trieste, IT, 2024.
 43. *Fast algorithms for nonlinear optimal control of geodesic flows of diffeomorphisms*. Contributed talk at the U.S. National Congress on Computational Mechanics (USNCCM7; Session: *Recent Advances in Large-Scale Optimal Engineering Design*), Albuquerque, NM, 2023.
 42. *Shape classification through the lens of geodesic flows of diffeomorphisms*. Invited talk (hosts: D. Labate (UHouston), B. Tatiana (UBath), S. D. V. Rea (Centro de Investigación en Matemática)) at workshop entitled "Leveraging Model- and Data-Driven Methods in Medical Imaging" at Banff International Research Station for Mathematical Innovation and Discover, CA, 2023.
 41. *Scalable algorithms for inverse problems governed by dynamical systems*. Invited talk (host: C. M. Neuhauser) at DSI's webinar at the HPE Data Science Institute, University of Houston, Houston, TX, 2023.
 40. *Deep neural networks for Bayesian inverse problems governed by nonlinear ODEs*. Invited talk (hosts: A. S. Giovanni (UGenoa), A. Andrea (UMilan), B. Tatiana (UBath), R. Luca (UBologna), S. Matteo (UGenoa)) at workshop entitled "Learning for Inverse Problems" at Istituto Nazionale di Alta Matematica, Rome, IT, 2023.
 39. *Efficient numerical methods for optimal control problems governed by geodesic flows of diffeomorphisms*. Invited colloquium talk (host: J. Rudi) at the Department of Mathematics, Virginia Tech, Blacksburg, VA, US, 2023.
 38. *Efficient numerical methods for optimal control problems governed by geodesic flows of diffeomorphisms*. Invited talk (host: S. Foucart) at Center for Approximation and Mathematical Data Analytics, Texas A&M University, College Station, TX US, 2023.
 37. *Fast algorithms for optimal control problems governed by geodesic flows of diffeomorphisms*. Invited talk (host: S. Shontz) at Mathematical Methods and Interdisciplinary Computing Center (MMICC) at the University of Kansas, Lawrence, KS, US 2023.
 36. *Numerical methods for PDE-constrained optimization problems governed by hyperbolic equations*. Invited colloquium talk (host: J. R. Romero) at the Department of Mathematical Sciences, University of Puerto Rico, Mayaguez Campus, US, 2023.
 35. *CLAIRE: Scalable multi-GPU algorithms for diffeomorphic image registration in 3D*. Invited talk (host: D. Gunay) in Applied and Computational Mathematics Division (ACMD) Seminar Series at the National Institute of Standards and Technology (NIST), Boulder, CO, US, 2023.

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34. *Deep learning for Bayesian inverse problems governed by nonlinear differential equations*. Contributed talk at SIAM Conference on Computational Sciences and Engineering (CSE23; Session: *Uncertainty Quantification for Data-Intensive Inverse Problems and Learning*), Amsterdam, NL, 2023.
 33. *CLAIRE: Scalable multi-GPU algorithms for diffeomorphic image registration* Contributed talk at Joint Mathematics Meetings (JMM23; Session: *SIAM Minisymposium on Imaging and Inverse Problems*); Boston, MA, US, 2023.
 32. *Fast algorithms for nonlinear optimal control of geodesic flows of diffeomorphisms*. Invited colloquium talk (host: H. Antil) at CMAI Colloquium at the Center for Mathematics and Artificial Intelligence, George Mason University, Fairfax, VA, US, 2022.
 31. *Randomized algorithms for efficient preconditioning and uncertainty quantification in inverse transport problems*. Contributed talk at SIAM Conference on Mathematics of Data Science (MDS22; Session: *Randomized Methods in Large-Scale Inference and Data Problems*); San Diego, CA, US, 2022.
 30. *Fast algorithms for initial value control problems for diffeomorphic image registration*. Contributed talk at Copper Mountain Conference on Iterative Methods (CM22; Session: *Efficient Optimization Algorithms*), Virtual Conference, 2022.
 29. *Fast algorithms for initial value control problems*. Contributed talk at SIAM Conference on Imaging Sciences (IS22; Session: *Partial Differential Equations and Control Problems*), Virtual Conference, 2022.
 28. *CLAIRE: Scalable multi-GPU algorithms for diffeomorphic image registration in 3D*. Contributed talk at SIAM Conference on Optimization (OPT21; Session: *Large-Scale Optimization for Inverse Problems and Learning in Medical Imaging*), Virtual Conference, 2021.
 27. *Uncertainty quantification for inverse transport problems*. Contributed talk at SIAM Conference on Computational Sciences and Engineering (CSE21; Session: *Uncertainty Quantification for Data-Intensive Inverse Problems and Learning*), Virtual Conference, 2021.
 26. *Fast algorithms for nonlinear optimal control of geodesic flows of diffeomorphisms*. Invited talk (hosted by T. Bui-Thanh; Oden Seminar) at the Oden Institute for Computational Engineering and Sciences, University of Texas at Austin, Virtual Seminar, 2021.
 25. *Fast GPU-accelerated diffeomorphic image registration in 3D*. Contributed talk at SIAM Conference on Imaging Science (IS20; Session: *Fast Algorithms for inverse problems and their applications*), Virtual Conference, 2020.
 24. *Automatic classification of 3D shapes and shape deformations*. Contributed talk at SIAM Conference on Mathematics in Data Science (MDS20; Session: *Integration of Model- and Data-Based Methods in Medical Imaging*), Virtual Conference, 2020.
 23. *Estimating oncogenic parameters via biophysical brain tumor growth modeling*. Invited talk (hosted by S. Bakas) at Annual Meeting of the Society for Neuro-Oncology (Session: *Computational Neuro-Oncology*), Phoenix, US, AZ, 2019.
 22. *Fast algorithms for nonlinear optimal control for diffeomorphic registration*. Invited talk (hosted by R. Herzog and E. Trélat) at RICAM's Special Semester on Optimization (organized by E. Sachs and K. Kunisch; Workshop: *New trends in PDE-constrained optimization*), Johann Radon Institute for Computational and Applied Mathematics (RICAM), Linz, Austria, 2019.
 21. *Uncertainty quantification in non-linear optimal control problems for diffeomorphic registration*. Contributed talk at AMS Fall Central Sectional Meeting (Session: *Uncertainty Quantification Strategies for Physics Applications*), University of Wisconsin, Madison, WI, 2019.

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20. *Fast algorithms for nonlinear optimal control for diffeomorphic registration*. Invited talk (hosted by C. Brune) at Department of Mathematics (DAMUT Colloquium), University of Twente, Enschede, NL, 2019.
 19. *Fast algorithms for initial value control problems in image registration*. Contributed talk at Applied Inverse Problems (AIP) Conference (Session: *Analysis and fast numerical methods for inverse problems and their applications*), Grenoble, FR, 2019.
 18. *Diffeomorphic shape matching: Fast algorithms for non-linear optimal control problems*. Invited talk (hosted by M. Mougeot) at Éléments de mathématique pour l'intelligence artificielle, École Normale Supérieure, Paris-Saclay, Cachan, FR, 2019.
 17. *Parallel algorithms for hyperbolic PDE-constrained optimization problems*. Contributed talk at International Workshop on Parallel Matrix Algorithms and Applications (PMAA; Session: *Krylov and regularization methods for large scale inverse problems*), ETH Zuerich, Zuerich, CH, 2018.
 16. *CLAIRE: A parallel solver for constrained large deformation diffeomorphic image registration*. Invited talk (hosted by M. Schulte) at Department of Computer Science at University of Stuttgart, Stuttgart DE, 2018.
 15. *CLAIRE: A parallel solver for constrained large deformation diffeomorphic image registration*. Contributed talk at SIAM Conference on Imaging Sciences (IS18; Session: *Diffeomorphic image registration: Numerics, applications, and theory*), Bologna, IT, 2018.
 14. *Computational mathematics meets medicine: Formulations, numerics, and parallel computing*. Invited talk (hosted by J. Nagy) at Numerical Analysis and Scientific Computing Seminar at Department of Mathematics & Computer Science, Emory University, Atlanta, GA, US, 2018.
 13. *CLAIRE: A distributed-memory solver for constrained diffeomorphic image registration*. Invited colloquium talk (hosted by J. Chan) at Computational and Applied Mathematics Department, Rice University, Houston, TX, US, 2018.
 12. *Parallel algorithms for PDE-constrained optimization problems with hyperbolic constraints*. Contributed talk at SIAM Conference on Computational Science and Engineering (CSE17; Session: *Fast solvers for large-scale inverse problems in imaging*), Atlanta, GA, US, 2017.
 11. *A distributed-memory Newton–Krylov solver for constrained diffeomorphic image registration*. Contributed talk at Applied Inverse Problems (AIP) Conference (Session: *Fast algorithms for numerical simulation and their applications in inverse problem*), Hangzhou, CN, 2017.
 10. *Preconditioners for the reduced space Hessian in hyperbolic optimal control problems*. Contributed talk at International Conference on Preconditioning Techniques for Scientific and Industrial Applications (Session: *Preconditioning methods in large-scale ill-posed inverse problems*), Vancouver, CA, 2017.
 9. *Efficient evaluation of Hessian operators arising in large-scale inverse transport problems*. Contributed talk at SIAM Conference on Uncertainty Quantification (UQ16; Session: *Uncertainty quantification and inversion of multiphysics and multiscale problems*), Lausanne, CH, 2016.
 8. *Fast solvers for constrained diffeomorphic image registration*. Contributed talk at SIAM Conference on Imaging Sciences (IS16; Session: *Efficient algorithms for large-scale inverse problems in medical imaging*), Albuquerque, NM, US, 2016.
 7. *Fast algorithms for diffeomorphic image registration*. Contributed talk at Workshop on Numerical Methods for Optimal Control and Inverse Problems, Technical University Munich, Munich, DE, 2016.

6. *A parallel solver for inverse transport problems*. Invited talk (hosted by L. Ruthotto) at Numerical Analysis and Scientific Computing Seminar at Department of Mathematics & Computer Science, Emory University, Atlanta, GA, US, 2016.
5. *Efficient algorithms for optimal control based diffeomorphic image registration*. Contributed talk at Workshop on Numerical Methods for Optimal Control and Inverse Problems, Technical University Munich, Munich, DE, 2015.
4. *Efficient algorithms for physically constrained diffeomorphic image registration*. Contributed talk at SIAM Conference on Computational Science and Engineering (CSE15; Session: *Efficient algorithms for variational methods in imaging*), Salt Lake City, UT, US, 2015.
3. *Optimal control meets medical imaging sciences: Applications, formulations and fast solvers*. Invited lecture (hosted by B. Menze) at Institute of Medical Engineering, Technical University Munich, Munich, DE, 2015.
2. *Image-based modeling of brain tumour progression: From individualization to priors for non-rigid image registration*. Contributed talk at SIAM Conference on Imaging Science (IS12; Session: *Mathematical challenges in 4D imaging*), Philadelphia, PA, US, 2012.
1. *Image-based modelling of tumor growth*. Invited talk (hosted by J. Modersitzki) at Institute of Mathematics and Image Computing, University of Lübeck, Lübeck, DE, 2011.

TEACHING, STUDENT LEARNING & ADVISING

Courses Taught

University	Number	Title	Units	Class	Size	SM-YR
UHouston	MATH 6397	Comp. & Math. Methods in Data Science	3	GR	13	Fa-25
	MATH 6367	Optimization Theory II	3	GR	24	Sp-25
	MATH 2318	Linear Algebra	3	UG	60	Sp-24
	MATH 6397	Comp. & Math. Methods in Data Science	3	GR	26	Sp-24
	MATH 6366	Optimization Theory I	3	GR	25	Fa-23
	MATH 2318	Linear Algebra	3	UG	59	Sp-23
	MATH 6397	Bayesian Inverse Problems & UQ ^a	3	GR	17	Sp-23
	MATH 6366	Optimization Theory I	3	GR	20	Fa-22
	MATH 3336	Discrete Mathematics	3	UG	80	Sp-22
	MATH 3336	Discrete Mathematics	3	UG	100	Fa-21
	MATH 6366	Optimization Theory I	3	GR	25	Fa-21
	MATH 3336	Discrete Mathematics	3	UG	99	Sp-21
	MATH 6397	Applied Inverse Problems ^a	3	GR	16	Fa-20
	MATH 6366	Optimization Theory I	3	GR	11	Fa-20
	MATH 2331	Linear Algebra	3	UG	75	Sp-20
	MATH 6366	Optimization Theory I	3	GR	29	Fa-19
	MATH 2331	Linear Algebra	3	UG	71	Sp-19
	MATH 6366	Optimization Theory I	3	GR	20	Fa-18
	MATH 2331	Linear Algebra	3	UG	36	Sp-18
	MATH 2331	Linear Algebra	3	UG	81	Fa-17
ULübeck		Image Processing	2	GR	20	Su-12
		Image Processing	2	GR	30	Su-11
		Image Processing ^a	2	GR	17	Su-10
		Imaging and Image Processing ^b	2	GR	14	Su-09
		Imaging and Image Processing ^{a,b}	2	GR	15	Su-08

a: new course; b: co-taught;

Other Teaching Activities

2025 Principal Lecturer (8 lectures) at **ChAMELEON Summer School**, University of Houston, Houston, TX, USA

Student Mentoring

Postdoctoral Research Associates

- **James Herring** (PhD: Applied Mathematics; Emory University) 2018–2019
Optimal Control & Inverse Problems
Current Employment: Research Scientist at Slingshot Aerospace, El Segundo, CA, USA.

PhD Academic Adviser

- **Samundra Regmi** (co-advised w/N. Charon) since 2024
Optimal Control & Machine Learning
- **Pegah Amiri** since 2024
Variational Bayesian Inference & Machine Learning
- **Asikul Islam** since 2024
Optimal Control & Inverse Problems
- **Jannatul Fedous Chhoa** (co-advised w/Y. He) 2021–2025
CLAIRE-MG: Efficient diffeomorphic image registration using multigrid-preconditioned Newton–Krylov methods
<https://hdl.handle.net/10657/20613>
Department of Mathematics, University of Houston. *Currently:* Lecturer, Department of Mathematics, University of Saint Thomas, Houston, TX, US.
- **Radmir Sultamuratov** (co-advised w/R. Azencott) 2021–2024
Distance-based classification and clustering of smooth surfaces
<https://hdl.handle.net/10657/18318>
Department of Mathematics, University of Houston.
Currently: Seismic Imaging Analyst at Viridien, Houston, TX, US.
- **German Villalobos** 2020–2023
Scientific machine learning for Bayesian inverse problems governed by the FitzHugh–Nagumo model
<https://hdl.handle.net/10657/16107>
Department of Mathematics, University of Houston
Currently: Data Scientist at Layer Scaffolding, Houston, TX, US
- **Jae Youn Kim** 2019–2023
Efficient numerical methods for initial value control problems for diffeomorphic image registration
<https://hdl.handle.net/10657/15999>
Department of Mathematics, University of Houston.
Currently: Lecturer, Department of Mathematics, University of Houston, Houston, TX, US.
- **Saeed (Sorena) Sarmadi** (co-advised w/R. Azencott) 2017–2020
Stochastic neural networks for cell tracking in video recordings of bacterial colonies
<https://hdl.handle.net/10657/7991>
Department of Mathematics, University of Houston, Houston, TX, US.
Currently: Vice President of Artificial Intelligence, NthsDS, Houston, TX, US.

Graduate Research Projects (Master Tutorials, Reading Courses & Internships)

- **Solomon Tumwekwase** since 2024
Stochastic Optimization & Uncertainty Quantification
- **Li Meng** 2023–2024
Variational Bayesian Inference & Inverse Problems
- **Muhammad Adil Chaudry** 2021
Optimal Control & Inverse Problems
- **Hossein Dabirian** (co-advised w/R. Azencott) 2019–2021
Optimal Control & Machine Learning
- **Felix Huber** (co-advised w/M. Schulte (UStuttgart); MSc thesis) 2018
Efficient Algorithms for Geodesic Shooting in Diffeomorphic Image Registration
- **Erin Gabrysch** (co-advised w/A. Quaini) 2018
Numerical Methods for Partial Differential Equations
- **Seyed Homayoon Shobeiri** (co-advised w/R. Azencott) 2017
Mathematical Methods for Image Analysis
- **Klaudius Scheufele** (PhD adviser: M. Schulte (UStuttgart)) 2017
Coupling Schemes and Inexact Newton for Multi-Physics and Coupled Optimization Problems
- **Jenny Stritzel** (co-advised w/T. M. Buzug; MSc thesis) 2013
Modellindividualisierung als Optimierungsproblem mit Differenzialgleichungsnebenbedingung (engl.: Personalized Modeling based on Optimization governed by Dynamical Systems)
- **Maik Stille** (co-advised w/W. R. Crum; MSc thesis) 2011
Reconstruction of a 3-dimensional Brain Volume from Fluorescent Images and its Co-Registration with Magnetic Resonance Imaging
- **Jan O. Jungmann** (co-advised w/T. M. Buzug; MSc thesis) 2009
In-silico Modelling of Tumour Growth: Diffusion-based Growth Models
- **Stefan Becker** (co-advised w/T. M. Buzug; MSc thesis) 2009
In-silico modelling of tumour growth: Parametric deformation models
- **Leila Ghaderi** (co-advised w/T. M. Buzug; MSc thesis) 2007
Thin-plate Spline Based Image Registration

Undergraduate Research Projects (Summer Research & Bachelor Thesis)

- **Dinh Binh Le** (SURF recipient) Summer 2025
Optimization & Deep Learning
- **Anjalee Nair** (SURF recipient) Summer 2024
Exploration of the Workings of Neural Networks
- **Brayan A. Gutierrez** (SURF recipient) Summer 2023
Stochastic Newton-MCMC for Bayesian Inference
- **Danial Khan** (SURF recipient) Summer 2022
Stein Variational Gradient Descent
- **Gundeep Singh** (PURS recipient) Summer 2021
Effective Numerical Schemes for Ill-Posed Inverse Problems
- **Ali Hamza Abidi Syed** (SURF recipient) Summer 2021
From PDE-Constrained Optimization to DNNs
- **Ali Hamza Abidi Syed** (PURS recipient) Fall 2021
Optimization and Optimal Control in Machine Learning
- **Yaseen Syed** (PURS recipient) Fall 2021
Fast Evaluation of Kernel Distances
- **Haley Rosso** (SURF recipient) Summer 2020

Regularization Schemes for Linear Inverse Problems

- **Gundeep Singh** Summer 2019
Numerical Optimization & Machine Learning
- **Orion Lowy** (co-advised with B. Bodmann) Summer 2018
Image Computing
- **Brenda Gonzalez** (SURF recipient) Summer 2018
Fast and Stable Algorithms for Deep Learning
- **Naveen Himthani** (co-advised w/G. Biros) Summer 2015
Numerical Methods for Parabolic Partial Differential Equations
- **Krishan Mittal** (co-advised w/G. Biros) Summer 2015
Numerical Methods for Parabolic Partial Differential Equations
- **Ioanis Tsonas** (co-advised w/G. Biros) 2014
Mathematical Methods for Image Computing
- **Philip Klein** (co-advised w/T. M. Buzug; BSc thesis) 2013
Rigide Registrierung von vektorwertigen Daten: Anwendungsgebiet MPI (engl.: Rigid Registration of vector-valued Data for MPI)
- **Thomas Polzin** (co-advised w/T. M. Buzug; BSc thesis) 2010
Reorientation of Diffusion Tensors
- **Viktor Wottschel** (co-advised w/T. M. Buzug; BSc thesis) 2010
Diffusion-based Filters for Noise Reduction in Diffusion Tensor Imaging Data

PhD Committee Member

- 2025 **Michela Marini** (adviser: D. Labate (UHouston)): *Supervised and unsupervised learning of single-cell morphological profiling.*
- Raunak Sarbajna** (adviser: C. Eick (UHouston)): *Spatial computing frameworks for adaptive disaster response and visual place recognition.*
- Navid Namakforoosh** (adviser: W. Ott (UHouston)): *Theoretical and computational approaches to minimal mobile sensing.*
- 2024 **An Vu** (adviser: D. Labate (UHouston)): *Multi-dimensional orientable framelets with compact support.*
- Sen Lin** (adviser: R. Azencott (UHouston)): *Multi-quantile estimator: A robust estimation algorithm for generalized extreme value distribution parameters and its application in analyzing extreme values in intraday stock price movement.*
- Ji Shi** (adviser: D. Labate (UHouston)): *Optimal approximation of high-dimensional functions on smooth manifolds using deep ReLU neural networks.*
- Heng Zhao** (adviser: D. Labate (UHouston)): *Integration of model- and learning-based methods in image restoration.*
- Phuong Tran** (adviser: M. Nicol (UHouston)): *The study of extremes for functionals on certain hyperbolic dynamical systems: A theoretical and applied approach.*
- 2023 **Ivan Ezhov** (adviser: B. H. Menze (UZuerich)): *Learnable personalization of brain tumor growth models.*
- Nickolas Fularczyk** (adviser: D. Labate (UHouston)): *Deep learning for neuroscience imaging and convolutional framelets using a tensor representation.*
- Yewen Huang** (MATH; adviser: D. Labate (UHouston)): *Quantitative analysis of fluorescent images of glia cells using deep neural networks.*
- Jennifer Ruhnnow May** (adviser: B. Bodmann (UHouston)): *Geometric conditions for the recovery of sparse signals on graphs from measurements generated with heat kernels.*
- 2022 **Seyyed Mahmood Ghasemi** (adviser: R. Azencott (UHouston)): *Gene transcription analysis at the cell population level.*

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- Alexander Zhiliakov** (adviser: M. Olshanskii (UHouston)): *Trace finite element method for material surface flows.*
- Yingxue Su** (adviser: R. Azencott (UHouston)): *Rare events simulation in bacterial genetic evolution models.*
- Naveen Himthani** (adviser: G. Biros (UTAustin)): *High performance algorithms for medical image registration with applications in neuroradiology.*
- 2021 **Zahed Shahmoradi** (adviser: T. Lee (UHouston)): *Data-driven inverse linear programming: Integrating inverse optimization and machine learning.*
- Jeric S. Alcalá** (adviser: I. Timofeyev (UHouston)): *Subgrid-scale parametrization of unresolved processes.*
- Xiaoqian Chen** (adviser: I. Timofeyev (UHouston)): *Effective data-driven models for chaotic and turbulent dynamics.*
- Neil Jerome A. Egarguin** (adviser: D. Onofrei (UHouston)): *Active control of exterior wavefields and applications.*
- 2020 **Wilfredo J. Molina** (adviser: D. Labate (UHouston)): *Improving the stability of the recovery of algebraic curves via Bernstein basis polynomials and neural networks.*
- Kazem Safaripoorfatide** (adviser: D. Labate (UHouston)): *Receptive field convolutional neural networks and applications in image classification.*
- Basanta Pahari** (adviser: D. Labate (UHouston)): *Smooth projections and optimally sparse representation of cartoon-like cylindrical solids.*
- Mohamadkazem Safaripoorfatide** (adviser: D. Labate (UHouston)): *Receptive field convolutional neural networks and applications in image classification.*
- Sabrina Hoteit Assi** (adviser: D. Labate (UHouston)): *Geometric multiscale representations and applications to the analysis to retinal fundus images.*
- 2019 **Peng Zhang** (advisers: R. Azencott (UHouston) & J. He (UHouston)): *Diffeomorphic shape matching based on an operator splitting method.*
- Kayla M. Bicol** (adviser: A. Quaini (UHouston)): *Advances in algorithms for atmospheric sciences.*
- 2018 **Nikolaos Mitsakos** (adviser: M. Papadakis (UHouston)): *Virtual multimodal object detection and classification with deep CNNs.*

SERVICE TO PROFESSION

Editorial Service

- 2023– Member of Editorial Board of [Advances in Continuous and Discrete Models](#) (ACDM).
- 2021– Member of Editorial Board of the [AIMS Journal of Numerical Algebra, Control and Optimization](#) (AIMS NACO).

Review Activity

Review Activity for Journals (Selected)

SIAM Journal on Scientific Computing ([link](#)) • SIAM Journal on Imaging Sciences ([link](#)) • Journal of Scientific Computing ([link](#)) • Journal of Computational Physics ([link](#)) • AIMS Inverse Problems and Imaging ([link](#)) • AIMS Journal of Numerical Algebra, Control and Optimization ([link](#)) • Applied Mathematics and Computation ([link](#)) • Applied Numerical Mathematics ([link](#)) • IMA Journal of Applied Mathematics ([link](#)) • Optimization and Engineering ([link](#)) • Transactions on Mathematical Software ([link](#)) • Computer Vision and Image Understanding ([link](#)) • Journal of Mathematical Imaging and Vision ([link](#)) • Computer Methods in Applied Mechanics & Engineering ([link](#)) • Mathematical & Computer Modelling ([link](#)) • Signal Processing ([link](#)) • SIAM Undergraduate Research Online ([link](#))

Reviewer and Panelist for Federal Funding Agencies

- Panelist for the [National Science Foundation](#)
 - [Directorate for Mathematical and Physical Sciences](#) (four panels)
 - [Directorate for Computer and Information Science and Engineering](#) (one panels).
- Panelist for the [Department of Defense National Defense Science and Engineering Graduate Fellowship Program](#) (one panel)

Organization of Conferences, Workshops & Minisymposia

2026 Co-chair (w/R. Morrison (UColorado) & R. Willett (UChicago)) of *SIAM Conference on Mathematics of Data Science*, Salt Lake City, UT.

Co-organization (w/ R. White (Sandia), T. Bui-Thanh (UTAustin) & L. Ramirez Ramirez (CIMAT)) of BIRS workshop [Integrating Data- and Physics-Driven Methods for Decision Making under Uncertainty](#), Casa Matemática Oaxaca (CMO), MX.

2025 Co-organization (w/ Y. He (UHouston), L. Capanera (UHouston) & M. Wang (UHouston)) of the CBMS conference [Research at the Interface of Applied Mathematics and Machine Learning](#), University of Houston, Houston, TX, US.

Co-organization (w/N. Charon (UHouston) and E. Hartman (UHouston)) of mini-symposium *Recent advances in high-dimensional and geometric data analysis* at [SIAM TX-LA Annual Conference](#), Austin, TX, US.

Organization of [ChAMELEON Summer School](#), University of Houston, Houston, TX, US.

Member of the SIAM Coordinating Committee for the Joint Mathematics Meetings (JMM 2026; Secretary).

Co-organization (w/A. Saibaba (NCState)) of mini-symposium *Data- and Model-driven Approaches for Inverse Problems* at [The Third Joint SIAM/CAIMS Annual Meetings](#), Montréal, Québec, CA.

Co-organization (w/J. Rudi (VTech) & I.-G. Farcas (VTech)) of mini-symposium *Fast Algorithms for Data- and Compute-Intensive Deterministic and Statistical Inverse Problems* at [SIAM Conference on Computational Sciences and Engineering](#), Fort Worth, TX, US.

2024 Co-organization (w/M. Chung (Emory)) of mini-symposium *Integration of Model and Data-Driven Methods for Large-Scale Inverse Problems* at [SIAM Conference on Mathematics of Data Science](#), Atlanta, GA, US.

Co-organization (w/D. Onofrei (UHouston)) of mini-symposium *Data- and Model-Driven Approaches for Inverse Problems* at [SIAM Texas-Louisiana Section Annual Meeting](#), Baylor University, Waco, TX, US.

Co-organization (w/A. Arnold (WPI)) of mini-symposium *Inverse Problems and Uncertainty Quantification in Biological and Medical Applications* at [International Conference on Computational and Mathematical Biomedical Engineering](#), George Mason University, Arlington, VA, US.

Co-organization (w/J. Modersitzki (ULuebeck) and J. Lellmann (ULuebeck)) of mini-symposium *Model- and Data-Driven Approaches in Motion Analysis* at [SIAM Conference on Imaging Sciences](#), Atlanta, US.

Co-organization (w/E. Newman (Emory) and S. Gamble (SRNL)) of mini-symposium *Data-Driven Methods for Analysis and Understanding of Images* at [SIAM Conference on Imaging Sciences](#), Atlanta, US.

Co-organization (w/A. Arnold (WPI)) of mini-symposium *Uncertainty Quantification for Large-Scale Inverse Problems Governed by Dynamical Systems* at [SIAM Conference on Uncertainty Quantification](#), Trieste, IT.

Organization of SIAM session *Mathematical Methods in Computer Vision and Image Analysis* at the [Joint Mathematics Meeting](#), San Francisco, CA, US.

2023 Co-organization (w/A. Mamonov (UHouston) & D. Onofrei (UHouston)) of mini-symposium *Data- and Model-Driven Approaches for Inverse Problems* at [SIAM TX-LA Annual Conference](#), Lafayette, LA, US.

Co-organization (w/G. Biros (UTAustin)) of mini-symposium *Recent Advances in Variational and Data-Driven Methods for Inverse Problems* at [SIAM Conference on Optimization](#), Seattle, WA, US.

Co-organization (w/J. Rudi (VirginiaTech) & T. Bui-Thanh (UTAustin)) of mini-symposium *Uncertainty Quantification for Data-Intensive Inverse Problems and Learning* at [SIAM Conference on Computational Sciences and Engineering](#), Amsterdam, NL.

Co-organization (w/G. Biros (UTAustin), M. Mehl (UStuttgart) & B. Menze (ETH Zürich)) of Dagstuhl Seminar *Inverse Biophysical Modeling and Machine Learning* (seminar 23022) at [Schloss Dagstuhl](#), DE.

2022 Co-organization (w/A. Mamonov (UHouston) & D. Onofrei (UHouston)) of mini-symposium *Recent Advances in Large-Scale Inverse Problems: Numerics, Theory, and Applications* at [SIAM TX-LA Annual Conference](#), Houston, TX, US.

Member of the organizing committee of the 5th [SIAM TX-LA Annual Conference](#) at the University of Houston, Houston, TX.

Member of the program committee of the [MICCAI BrainLes Workshop 2022](#), a satellite event of the [International Conference on Medical Image Computing and Computer Assisted Intervention](#) (MICCAI).

Co-organization (w/D. Labate (UHouston)) of mini-symposium *Integration of Model and Data-Driven Methods with Applications in Imaging* at [SIAM Conference on Mathematics of Data Science](#), San Diego, CA, US.

Co-organization (w/T. Bui-Thanh (UTAustin)) of mini-symposium *Uncertainty Quantification for Data-Intensive Inverse Problems and Machine Learning* at [World Congress on Computational Mechanics](#) (WCCM-APCOM 2022), Yokohama, JP.

Co-organization (w/G. Biros (UTAustin) & M. Schulte (UStuttgart)) of mini-symposium *Recent Advances on Integrating Optimization, Learning, and Modeling with Medical Imaging* at [SIAM Conference on Imaging Sciences](#); virtual conference.

Co-organization (w/N. Charon (John Hopkins)) of mini-symposium *Shape Matching, Shape Analysis, and Morphometry: Theory, Numerics, and Applications* at [SIAM Conference on Imaging Sciences](#); virtual conference.

2021 Member of the program committee of the [MICCAI BrainLes Workshop 2021](#), a satellite event of the [International Conference on Medical Image Computing and Computer Assisted Intervention](#) (MICCAI).

Co-organization (w/G. Biros (UTAustin)) of mini-symposium *Large-Scale Optimization for Inverse Problems and Learning in Medical Imaging* at [SIAM Conference on Optimization](#); virtual conference.

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- Co-organization (w/H. Goh (UTAustin) & T. Bui-Thanh (UTAustin)) of mini-symposium *Uncertainty Quantification for Data-Intensive Inverse Problems and Learning* at [SIAM Conference on Computational Sciences and Engineering](#); virtual conference.
- 2020 Co-organization (w/S. Subramanian (UTAustin)) of mini-symposium *Recent Advances in Inverse Problems: Numerics, Theory, and Applications* at [SIAM TX-LA Sectional Meeting](#); virtual conference.
- Co-organization (w/D. Labate (UHouston)) of mini-symposium *Integration of Model-Based and Data-Based Methods with Medical Imaging* at [SIAM Conference on Mathematics of Data Science](#); virtual conference.
- 2019 Co-organization (w/T. Bui-Thanh (UTAustin)) of minisymposium *Recent advances in inverse problems & imaging* at [SIAM TX-LA Sectional Meeting](#), Southern Methodist University, Dallas, TX, US.
- Co-organization (w/J. Herring (UHouston)) of minisymposium *Fast iterative methods for large-scale inverse problems in imaging* at [International Congress on Industrial and Applied Mathematics](#), Valencia, ES.
- Co-organization (w/J. Herring (UHouston)) of minisymposium *Numerical methods for optimal control problems in imaging* at [Applied Inverse Problems Conference](#), Saint-Martin-d'Hères, FR.
- Co-organization (w/J. Herring (UHouston) and G. Biros (UTAustin)) of minisymposium *Fast solvers for inverse problems with PDEs* at [SIAM Conference on Computational Sciences and Engineering](#), Spokane, WA, US.
- 2018 Co-organization (w/G. Biros (UTAustin)) of minisymposium *Diffeomorphic image registration: Numerics, applications, and theory* at [SIAM Conference on Imaging Sciences](#), Bologna, IT.
- 2017 Co-organization (w/G. Biros (UTAustin)) of minisymposium *Fast solvers for large-scale inverse problems in imaging* at [SIAM Conference on Computational Sciences and Engineering](#), Atlanta, GA, US.
- 2016 Co-organization (w/G. Biros (UTAustin)) of minisymposium *Efficient algorithms for large-scale inverse problems in medical imaging* at [SIAM Conference on Imaging Sciences](#), Albuquerque, NM, US.
- 2015 Co-organization (w/G. Biros (UTAustin)) of minisymposium *Efficient algorithms for variational methods in imaging* at [SIAM Conference on Computational Sciences and Engineering](#), Salt Lake City, UT, US.

Academic and Professional Memberships

- American Mathematical Society ([AMS](#))
- Association for Computing Machinery ([ACM](#))
- Society of Industrial and Applied Mathematics ([SIAM](#))
- Pi Mu Epsilon ([PME](#))

UNIVERSITY SERVICE

University of Houston

- Member of the Organizing Committee of the Amundson Lecture Series (year 2026).
- Member of *Executive Committee* (EC) (academic years: 2024, 2025).
- Member of *Faculty Search Committees* for tenure-track positions (six committees).
- Member of the *Graduate Studies Committee* (academic years: 2020–2025).
- Co-organization (w/D. Labate & M. Papadakis) of *Data-Enabled Science Seminar*, since SP20.
- Co-organization (w/D. Labate & M. Papadakis) of *Image Analysis Seminar*, SP18–FA19.

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- Judge for the *Graduate Paper Presentations* organized by the UH SIAM and UH AMS Student Chapters, SP18, SP22.
 - Faculty Adviser for the *Texas Theta Chapter* of Pi Mu Epsilon (PME) since SP18.
 - Member of *Colloquium Committee* (academic years: 2017–2024).

OUTREACH

- Participation in *Math and Science Family Night* at the Durham Elementary School, Houston, TX, SP23.
- Talk *Making Waves with Mathematics* at Mega-Mathletes event organized by the Mu Alpha Theta National Honor Society at the Stephen F. Austin High School, Houston, TX, SP20.