

# Ali Siahkoohi

Simons Postdoctoral Fellow  
Dept. of Comp. Applied Math. & Operations Research  
Rice University

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<https://alishahkoohi.github.io>  
Last updated: September 19, 2024

## Research Interests and Highlights

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My research in *scientific machine learning*, under the mentorship of Maarten V. de Hoop and Richard G. Baraniuk, bridges the gap between AI and computational science with the goal of designing reliable AI models through the incorporation of domain-specific knowledge and quantification of uncertainty. Primarily based on generative models and amortized inference, these methods are designed to enhance the robustness and trustworthiness of AI models in complex, dynamic environments with limited access to data.

I have published 39 peer-reviewed articles (citations: 802, h-index: 17, i10-index: 24), including 17 first-author papers in high-impact journals and conference proceedings, such as NeurIPS, ICML, ICLR, Interspeech, and TMLR.

## Education

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### Georgia Institute of Technology

Ph.D. in Computational Science and Engineering (minor in Applied Math.)  
Advised by Felix J. Herrmann

August 2022  
Atlanta, GA, USA

### University of Tehran

M.Sc. in Geophysics

March 2016  
Tehran, Iran

### Sharif University of Technology

B.Sc. in Electrical Engineering

August 2013  
Tehran, Iran

## Academic Appointments

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### Rice University

Simons Postdoctoral Fellow  
Department of Computational Applied Mathematics & Operations Research  
Jointly hosted by Maarten V. de Hoop and Richard G. Baraniuk

August 2022 – Present  
Houston, TX, USA

## Publications

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Google Scholar profile: <https://scholar.google.com/citations?user=sxRMqYIAAAAJ&h>

### In Preparation & Under Review

- P4. [A. Siahkoohi](#), R. Morel, R. Balestrierio, E. Allys, G. Sainton, T. Kawamura, and M. V. de Hoop. Martian time-series unraveled: A multi-scale nested approach with factorial variational autoencoders. Preprint arXiv:2305.16189; under review by *IEEE Transactions on Neural Networks and Learning Systems*, 2024  
[pdf] [code] [slides] [bib]
- P3. P. M. Mayer, L. Luzi, [A. Siahkoohi](#), D. H. Johnson, and R. G. Baraniuk. Removing bias from maximum likelihood estimation with model autophagy. Preprint arXiv:2405.13977; under review by *NeurIPS*, 2024  
[pdf] [bib]
- P2. L. Baldassari, [A. Siahkoohi](#), J. Garnier, K. Sølna, and M. V. de Hoop. Taming score-based diffusion priors for infinite-dimensional nonlinear inverse problems. Preprint arXiv:2405.15676; under review by *NeurIPS*, 2024  
[pdf] [bib]
- P1. R. Orozco, [A. Siahkoohi](#), M. Louboutin, and F. J. Herrmann. ASPIRE: Iterative amortized posterior inference for Bayesian inverse problems. Preprint arXiv:2405.05398; under review by *Inverse Problems*, 2024a  
[pdf] [code] [bib]

## Journal Publications

- J7. R. Orozco, P. Witte, M. Louboutin, [A. Siahkoohi](#), G. Rizzuti, B. Peters, and F. J. Herrmann. InvertibleNetworks.jl: A Julia package for scalable normalizing flows. *Journal of Open Source Software*, 9(99):6554, 2024b  
[pdf] [code] [link] [bib]
- J6. L. Luzi, P. M. Mayer, J. Casco-Rodriguez, [A. Siahkoohi](#), and R. G. Baraniuk. Boomerang: Local sampling on image manifolds using diffusion models. *Transactions on Machine Learning Research*, 2024a  
[pdf] [code] [link] [bib]
- J5. M. Louboutin, Z. Yin, R. Orozco, T. J. Grady II, [A. Siahkoohi](#), G. Rizzuti, P. A. Witte, O. Møyner, G. J. Gorman, and F. J. Herrmann. Learned multiphysics inversion with differentiable programming and machine learning. *The Leading Edge*, 42(7):474–486, 2023  
[pdf] [link] [bib] [featured in Seismic Soundoff] [journal's most downloaded paper in '23]
- J4. Y. Zhang, Z. Yin, O. López, [A. Siahkoohi](#), M. Louboutin, R. Kumar, and F. J. Herrmann. Optimized time-lapse acquisition design via spectral gap ratio minimization. *Geophysics*, 88(4):A19–A23, 2023a  
[pdf] [link] [bib]
- J3. [A. Siahkoohi](#), G. Rizzuti, R. Orozco, and F. J. Herrmann. Reliable amortized variational inference with physics-based latent distribution correction. *Geophysics*, 88(3):R297–R322, 2023a  
[pdf] [slides] [code] [link] [bib] [featured in Geophysics Bright Spots]
- J2. [A. Siahkoohi](#), G. Rizzuti, and F. J. Herrmann. Deep Bayesian inference for seismic imaging with tasks. *Geophysics*, 87(5):S281–S302, 2022a  
[pdf] [code] [link] [bib]
- J1. [A. Siahkoohi](#), M. Louboutin, and F. J. Herrmann. The importance of transfer learning in seismic modeling and imaging. *Geophysics*, 84(6):A47–A52, 2019a  
[pdf] [code] [link] [bib]

## Peer-Reviewed Conference Proceedings

- C32. S. Alemohammad, J. Casco-Rodriguez, L. Luzi, A. I. Humayun, H. Babaei, D. LeJeune, [A. Siahkoohi](#), and R. G. Baraniuk. Self-consuming generative models go MAD. In *The Twelfth International Conference on Learning Representations*, 2024  
[pdf] [extended pdf] [poster] [link] [bib] [featured in the news 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12]
- C31. L. Luzi, D. LeJeune, [A. Siahkoohi](#), S. Alemohammad, V. Saragadam, H. Babaei, N. Liu, Z. Wang, and R. G. Baraniuk. Titan: Bringing the deep image prior to implicit representations. In *IEEE International Conference on Acoustics, Speech and Signal Processing*, pages 6165–6169, 2024b  
[pdf] [code] [link] [bib]
- C30. L. Baldassari, [A. Siahkoohi](#), J. Garnier, K. Sølna, and M. V. de Hoop. Conditional score-based diffusion models for Bayesian inference in infinite dimensions. In *Advances in Neural Information Processing Systems*, volume 36, pages 24262–24290, 2023  
[pdf] [slides] [poster] [code] [link] [bib] [featured as a Spotlight presentation]
- C29. [A. Siahkoohi](#), R. Morel, M. V. de Hoop, E. Allys, G. Sainton, and T. Kawamura. Unearthing InSights into Mars: Unsupervised source separation with limited data. In *Proceedings of the 40th International Conference on Machine Learning*, volume 202, pages 31754–31772, 2023b  
[pdf] [slides] [poster] [code] [link] [bib]
- C28. R. Orozco, M. Louboutin, [A. Siahkoohi](#), G. Rizzuti, T. van Leeuwen, and F. J. Herrmann. Amortized normalizing flows for transcranial ultrasound with uncertainty quantification. In *Medical Imaging with Deep Learning*, volume 227, pages 332–349, 2023a  
[pdf] [link] [bib]
- C27. R. Orozco, [A. Siahkoohi](#), M. Louboutin, and F. J. Herrmann. Refining amortized posterior approximations using gradient-based summary statistics. In *5th Symposium on Advances in Approximate Bayesian Inference*, 2023b  
[pdf] [link] [bib]
- C26. R. Orozco, [A. Siahkoohi](#), G. Rizzuti, T. van Leeuwen, and F. J. Herrmann. Adjoint operators enable fast and

- amortized machine learning based Bayesian uncertainty quantification. In *Medical Imaging 2023: Image Processing*, volume 12464, page 124641L, 2023c  
[pdf] [link] [bib]
- C25. Y. Zhang, Z. Yin, O. Lopez, A. Siahkoohi, M. Louboutin, and F. J. Herrmann. 3D seismic survey design by maximizing the spectral gap. In *Third International Meeting for Applied Geoscience & Energy*, 2023b  
[pdf] [poster] [bib]
- C24. A. Siahkoohi, M. Chinen, T. Denton, W. B. Kleijn, and J. Skoglund. Ultra-low-bitrate speech coding with pretrained Transformers. In *Proceedings of Interspeech*, pages 4421–4425, 2022b  
[pdf] [link] [bib]
- C23. A. Siahkoohi, M. Louboutin, and F. J. Herrmann. Velocity continuation with Fourier neural operators for accelerated uncertainty quantification. In *Society of Exploration Geophysicists Technical Program Expanded Abstracts*, pages 1765–1769, 2022c  
[pdf] [slides] [code] [link] [bib]
- C22. M. Louboutin, P. Witte, A. Siahkoohi, G. Rizzuti, Z. Yin, R. Orozco, and F. J. Herrmann. Accelerating innovation with software abstractions for scalable computational geophysics. In *Society of Exploration Geophysicists Technical Program Expanded Abstracts*, pages 1482–1486, 2022  
[pdf] [slides] [link] [bib]
- C21. Z. Yin, A. Siahkoohi, M. Louboutin, and F. J. Herrmann. Learned coupled inversion for carbon sequestration monitoring and forecasting with Fourier neural operators. In *Society of Exploration Geophysicists Technical Program Expanded Abstracts*, pages 467–472, 2022  
[pdf] [slides] [code] [link] [bib] [student oral paper honorable mention]
- C20. Y. Zhang, M. Louboutin, A. Siahkoohi, Z. Yin, R. Kumar, and F. J. Herrmann. A simulation-free seismic survey design by maximizing the spectral gap. In *Society of Exploration Geophysicists Technical Program Expanded Abstracts*, pages 15–20, 2022  
[pdf] [slides] [code] [link] [bib]
- C19. A. Siahkoohi, R. Orozco, G. Rizzuti, and F. J. Herrmann. Wave-equation based inversion with amortized variational Bayesian inference. In *EAGE Deep learning for seismic processing: Investigating the foundations workshop*, 2022d  
[pdf] [slides] [code] [link] [bib]
- C18. R. Orozco, A. Siahkoohi, G. Rizzuti, T. van Leeuwen, and F. J. Herrmann. Photoacoustic imaging with conditional priors from normalizing flows. In *NeurIPS Workshop on Deep Learning and Inverse Problems*, 2021  
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- C17. A. Siahkoohi, G. Rizzuti, M. Louboutin, P. Witte, and F. J. Herrmann. Preconditioned training of normalizing flows for variational inference in inverse problems. In *3rd Symposium on Advances in Approximate Bayesian Inference*, 2021  
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- C16. A. Siahkoohi and F. J. Herrmann. Learning by example: Fast reliability-aware seismic imaging with normalizing flows. In *Society of Exploration Geophysicists Technical Program Expanded Abstracts*, pages 1580–1585, 2021  
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- C15. R. Kumar, M. Kotsi, A. Siahkoohi, and A. Malcolm. Enabling uncertainty quantification for seismic data preprocessing using normalizing flows (NF)—An interpolation example. In *Society of Exploration Geophysicists Technical Program Expanded Abstracts*, pages 1515–1519, 2021  
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- C14. G. Rizzuti, A. Siahkoohi, P. A. Witte, and F. J. Herrmann. Parameterizing uncertainty by deep invertible networks, an application to reservoir characterization. In *Society of Exploration Geophysicists Technical Program Expanded Abstracts*, pages 1541–1545, 2020  
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- C13. M. Zhang, A. Siahkoohi, and F. J. Herrmann. Transfer learning in large-scale ocean bottom seismic wavefield reconstruction. In *Society of Exploration Geophysicists Technical Program Expanded Abstracts*, pages

1666–1670, 2020

[pdf] [slides] [code] [link] [bib]

- C12. [A. Siahkoohi](#), G. Rizzuti, and F. J. Herrmann. Weak deep priors for seismic imaging. In *Society of Exploration Geophysicists Technical Program Expanded Abstracts*, pages 2998–3002, 2020a  
[pdf] [slides] [code] [link] [bib]
- C11. [A. Siahkoohi](#), G. Rizzuti, and F. J. Herrmann. Uncertainty quantification in imaging and automatic horizon tracking—A Bayesian deep-prior based approach. In *Society of Exploration Geophysicists Technical Program Expanded Abstracts*, pages 1636–1640, 2020b  
[pdf] [slides] [code] [link] [bib]
- C10. [A. Siahkoohi](#), G. Rizzuti, and F. J. Herrmann. A deep-learning based Bayesian approach to seismic imaging and uncertainty quantification. In *European Association of Geoscientists & Engineers Conference and Exhibition Extended Abstracts*, 2020c  
[pdf] [slides] [code] [link] [bib]
- C9. F. J. Herrmann, [A. Siahkoohi](#), and G. Rizzuti. Learned imaging with constraints and uncertainty quantification. In *NeurIPS Deep Inverse Workshop*, 2019  
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- C8. [A. Siahkoohi](#), R. Kumar, and F. J. Herrmann. Deep-learning based ocean bottom seismic wavefield recovery. In *Society of Exploration Geophysicists Technical Program Expanded Abstracts*, pages 2232–2237, 2019b  
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- C7. [A. Siahkoohi](#), D. J. Verschuur, and F. J. Herrmann. Surface-related multiple elimination with deep learning. In *Society of Exploration Geophysicists Technical Program Expanded Abstracts*, pages 4629–4634, 2019c  
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- C6. G. Rizzuti, [A. Siahkoohi](#), and F. J. Herrmann. Learned iterative solvers for the Helmholtz equation. In *European Association of Geoscientists & Engineers Conference and Exhibition Extended Abstracts*, 2019  
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- C5. [A. Siahkoohi](#), M. Louboutin, R. Kumar, and F. J. Herrmann. Deep convolutional neural networks in prestack seismic—two exploratory examples. In *Society of Exploration Geophysicists Technical Program Expanded Abstracts*, pages 2196–2200, 2018a  
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- C4. [A. Siahkoohi](#), R. Kumar, and F. J. Herrmann. Seismic data reconstruction with generative adversarial networks. In *European Association of Geoscientists & Engineers Conference and Exhibition Extended Abstracts*, 2018b  
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- C3. [A. Siahkoohi](#) and A. Gholami. Sparsity promoting least squares migration for laterally inhomogeneous media. In *7th EAGE Saint Petersburg International Conference and Exhibition*, 2016  
[pdf] [link] [bib]
- C2. M. S. Ebrahimi, M. H. Daraei, J. Rezaei, and [A. Siahkoohi](#). A novel utilization of wireless sensor networks as data acquisition system in smart grids. In *Materials Science and Information Technology*, volume 433–440, pages 6725–6730, 2012  
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- C1. A. Najafi, [A. Siahkoohi](#), and M. B. Shamsollahi. A content-based digital image watermarking algorithm robust against JPEG compression. In *IEEE International Symposium on Signal Processing and Information Technology*, pages 432–437, 2011  
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## Theses

- T1. [A. Siahkoohi](#). *Deep generative models for solving geophysical inverse problems*. PhD thesis, **Georgia Institute of Technology**, 2022  
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## Technical Reports

- R3. M. Louboutin, [A. Siahkoohi](#), R. Wang, and F. J. Herrmann. Low-memory stochastic backpropagation with multi-channel randomized trace estimation. Technical Report arXiv:2106.06998, Georgia Institute of Technology, 2021  
[pdf] [code] [link] [bib]
- R2. [A. Siahkoohi](#), G. Rizzuti, P. A. Witte, and F. J. Herrmann. Faster uncertainty quantification for inverse problems with conditional normalizing flows. Technical Report arXiv:2007.07985, Georgia Institute of Technology, 2020d  
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- R1. [A. Siahkoohi](#), M. Louboutin, and F. J. Herrmann. Neural network augmented wave-equation simulation. Technical Report arXiv:1910.00925, Georgia Institute of Technology, 2019d  
[pdf] [code] [link] [bib]

## Awards

### Future Faculty Fellows Award

Rice University, George R. Brown School of Engineering  
[link]

June 2024  
Houston, TX, USA

## Selected Research Proposal Experience

### Scientific ML-supported subsurface characterization in physical function spaces

Awarded, 2024

- Funding Source: Occidental Petroleum Corporation, PI: Maarten V. de Hoop
- **Contributions:** Developed ideas and contributed to writing for two of the four research thrusts entitled “Score diffusion, nonlinear operators, and uncertainty quantification in function spaces” and “Unsupervised, factorial data decomposition and hidden signals: Reservoir characterization below salt, denoising, and monitoring”

### Learning and forecasting complex fault dynamics – Predictability of earthquakes

Not funded, 2024

- Funding Source: National Science Foundation, PI: Maarten V. de Hoop
- **Contributions:** Developed ideas and contributed to writing for one of the four research thrusts entitled “Structure in data, clustering, lattice theory, and diffusion models”

### Exploring the local geometry of deep networks

Awarded, 2023

- Funding Source: Office of Naval Research (DURIP), PI: Richard G. Baraniuk
- **Contributions:** Developed ideas and wrote research objectives for one of the three research thrusts entitled “The geometry of deep probabilistic models”

### A deep-learning framework for stable, interpretable, and uncertainty-quantified hybrid modeling of multi-scale complex systems

Not funded, 2023

- Funding Source: Department of Energy, PI: Pedram Hassanzadeh
- **Contributions:** Coordinated efforts within Richard G. Baraniuk’s group (a co-PI) to develop and write research objectives for one of the four research thrusts entitled “Spline operator-based analysis of Deep neural networks”

### Topological deep learning, causal inference, and data-driven forecasting for subsurface multiscale multiphysics systems

Awarded, 2022

- Funding Source: Department of Energy, PI: Maarten V. de Hoop
- **Contributions:** Led the effort to write the annual progress report

## Mentoring Experience

### Paul M. Mayer [link]

PhD Student, Rice University

2022 – Present  
Houston, TX, USA

**Contributions:** Advised on the development of methods and software for two projects and co-authored two papers (Luzi et al., 2024a; Mayer et al., 2024)

|  |                  |
|--|------------------|
| <b>Rafael Orozco</b> <a href="#">[link]</a>  | 2020 – 2022      |
| PhD Student, Georgia Institute of Technology   | Atlanta, GA, USA |
| <b>Contributions:</b> Advised on the development of methods and software for main PhD thesis and co-authored four papers (Orozco et al., 2021, 2023b,c, 2024a) |                  |
| <b>Mi Zhang</b> <a href="#">[link]</a>   | 2019 – 2020      |
| Visiting PhD Student, China University of Petroleum-Beijing  | Atlanta, GA, USA |
| <b>Contributions:</b> Advised on the development of methods and software for a project and co-authored a paper (Zhang et al., 2020)                            |                  |

## Teaching Experience

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|   |                  |
|---|------------------|
| <b>Rice University</b>  | Houston, TX, USA |
| Department of Computational Applied Mathematics & Operations Research |                  |
| ▶ Numerical Analysis  | Fall 2024        |
| Substitute Instructor   |                  |
| ▶ Numerical Analysis I  | Fall 2022        |
| Substitute Instructor (18 lectures)                                   |                  |
| <b>Georgia Institute of Technology</b>                                | Atlanta, GA, USA |
| School of Computational Science and Engineering                       |                  |
| ▶ Computational Foundations of Machine Learning                       | Spring 2022      |
| Teaching Assistant  |                  |
| ▶ Imaging with Data-Driven Models                                     | Fall 2019        |
| Teaching Assistant  |                  |
| ▶ Numerical Analysis I  | Fall 2018        |
| Teaching Assistant  |                  |
| <b>Sharif University of Technology</b>                                | Tehran, Iran     |
| Department of Electrical Engineering                                  |                  |
| ▶ Digital Signal Processing   | Spring 2011      |
| Teaching Assistant  |                  |
| ▶ Signals and Systems   | Spring 2011      |
| Teaching Assistant  |                  |
| ▶ Linear Algebra  | Spring 2010      |
| Teaching Assistant  |                  |
| ▶ Electrical Engineering: Principles and Laboratory                   | Fall 2009        |
| Teaching Assistant  |                  |

## Talks

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### Invited Talks

|   |                           |
|---|---------------------------|
| <b>T22. CNRS, Université Montpellier</b>  | January 2023              |
| Low-cost uncertainty quantification for large-scale inverse problems            | Virtual oral presentation |
| RhEoVOLUTION Group (Dr. Andréa Tommasi)   |                           |
| <b>T21. Workshop on Subsurface Uncertainty Description and Estimation</b>       | August 2022               |
| Reliable amortized variational inference with conditional normalizing flows via | Oral presentation         |
| physics-based latent distribution correction                                    |                           |
| International Meeting for Applied Geoscience & Energy                           |                           |
| <b>T20. Intelligent illumination of the Earth Workshop</b>                      | June 2021                 |
| Fast and reliability-aware seismic imaging with conditional normalizing flows   | Virtual oral presentation |
| King Abdullah University of Science and Technology                              |                           |
| <b>T19. Advances in Seismic Imaging and Inversion Mini-symposium</b>            | October 2020              |
| Unsupervised data-guided uncertainty analysis in imaging and horizon            | Virtual oral presentation |

## Contributed Talks

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|---|---|
| T18. <b>International Conference on Machine Learning</b><br>Unearthing InSights into Mars: Unsupervised source separation with limited data   | July 2023<br>Poster presentation                    |
| T17. <b>Symposium on Advances in Approximate Bayesian Inference</b><br>Refining amortized posterior approximations using gradient-based summary statistics  | July 2023<br>Poster presentation                    |
| T16. <b>Geo-Mathematical Imaging Group Partners Meeting, Rice University</b><br>Martian time-series unraveled: A multi-scale nested approach with factorial variational autoencoders                                | May 2023<br>Oral presentation                       |
| T15. <b>Geo-Mathematical Imaging Group Partners Meeting, Rice University</b><br>Unearthing InSights into Mars: Unsupervised source separation with limited data   | May 2023<br>Oral presentation                       |
| T14. <b>International Meeting for Applied Geoscience &amp; Energy</b><br>Velocity continuation with Fourier neural operators for accelerated uncertainty quantification   | August 2022<br>Oral presentation                    |
| T13. <b>Chrome Media Team, Google</b><br>Low-bitrate speech coding with Transformers  | December 2021<br>Virtual oral presentation          |
| T12. <b>ML4SEISMIC Partners Meeting, Georgia Institute of Technology</b><br>Multifidelity conditional normalizing flows for physics-guided Bayesian inference   | November 2021<br>Virtual oral presentation          |
| T11. <b>ML4SEISMIC Partners Meeting, Georgia Institute of Technology</b><br>Uncertainty quantification in imaging and automatic horizon tracking—A Bayesian deep-prior based approach                               | November 2021<br>Virtual oral presentation          |
| T10. <b>Society of Exploration Geophysicists International Exposition and Annual Meeting</b><br>Learning by example: Fast reliability-aware seismic imaging with normalizing flows<br>[video]                       | September 2021<br>Virtual oral presentation         |
| T9. <b>Symposium on Advances in Approximate Bayesian Inference</b><br>Preconditioned training of normalizing flows for variational inference in inverse problems<br>[video]   | January 2021<br>Prerecorded short oral presentation |
| T8. <b>European Association of Geoscientists &amp; Engineers Annual Conference &amp; Exhibition</b><br>A deep-learning based Bayesian approach to seismic imaging and uncertainty quantification                    | December 2020<br>Virtual oral presentation          |
| T7. <b>Society of Exploration Geophysicists International Exposition and Annual Meeting</b><br>Uncertainty quantification in imaging and automatic horizon tracking—A Bayesian deep-prior based approach<br>[video] | October 2020<br>Virtual oral presentation           |
| T6. <b>Society of Exploration Geophysicists International Exposition and Annual Meeting</b><br>Weak deep priors for seismic imaging<br>[video]  | October 2020<br>Virtual oral presentation           |
| T5. <b>Society of Exploration Geophysicists Student Chapter, Georgia Tech</b><br>A deep-learning based Bayesian approach to seismic imaging and uncertainty quantification  | February 2020<br>Oral presentation                  |
| T4. <b>HotCSE Seminar, CSE Department, Georgia Institute of Technology</b><br>Learned imaging with constraints and uncertainty quantification   | November 2019<br>Oral presentation                  |
| T3. <b>Society of Exploration Geophysicists International Exposition &amp; Annual Meeting</b>   | September 2019                                      |

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|--|-------------------------------------|
| Deep-learning based ocean bottom seismic wavefield recovery  | Oral presentation                   |
| T2. <b>Society of Exploration Geophysicists International Exposition &amp; Annual Meeting</b><br>Surface-related multiple elimination with deep learning                         | September 2019<br>Oral presentation |
| T1. <b>Society of Exploration Geophysicists International Exposition &amp; Annual Meeting</b><br>Deep convolutional neural networks in prestack seismic—two exploratory examples | October 2018<br>Poster presentation |

## Professional Service

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### Editorial Service

- ▶ **Acta Geophysica**, Associate Editor  
Applied Geophysics section 2024 – Present
- ▶ **Journal of Mathematics**, Guest Editor 2023 – Present  
Special issue on Applied Mathematics in Inverse Problems and Uncertainty Quantification

### Conference Organization

- ▶ **Annual AAAI Conference on Artificial Intelligence**, Program Chair 2025
- ▶ **International Meeting for Applied Geoscience & Energy**, Session Chair 2022

### Technical Program Committee Member and Reviewer

- ▶ Annual AAAI Conference on Artificial Intelligence 2025
- ▶ Artificial Intelligence and Statistics Conference (AISTATS) 2024 – 2025
- ▶ International Conference on Learning Representations (ICLR) 2024 – 2025
- ▶ Neural Information Processing Systems (NeurIPS) 2023 – 2024
- ▶ Advances in Approximate Bayesian Inference (AABI) 2023 – 2024
- ▶ Structured Probabilistic Inference & Generative Modeling (ICML workshop) 2023 – 2024
- ▶ International Conference on Machine Learning (ICML) 2024
- ▶ International Speech Communication Association (Interspeech) 2023
- ▶ Deep Generative Models for Health (NeurIPS workshop) 2023
- ▶ International Meeting for Applied Geoscience & Energy 2023

### Journal Reviewer

- ▶ IEEE Transactions on Neural Networks and Learning Systems
- ▶ IEEE Geoscience and Remote Sensing Letters
- ▶ IEEE Transactions on Geoscience and Remote Sensing
- ▶ Notices of the American Mathematical Society (AMS)
- ▶ Remote Sensing
- ▶ Journal of Geophysical Research – Solid Earth
- ▶ Geophysical Prospecting
- ▶ Geophysics
- ▶ Geosciences
- ▶ Entropy

## Industry Research Experience

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|--|---|
| <b>Google</b><br>Research Intern (cf. <a href="#">A. Siahkoohi et al. (2022b)</a> )<br>Chrome Media Team | August 2021 – December 2021<br>San Francisco, CA, USA |
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## Selected Media Coverage

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|   |               |
|---|---------------|
| <b>AI Appears to Be Slowly Killing Itself</b><br>Futurism<br><a href="#">[link]</a>   | August 2024   |
| <b>When A.I.'s Output Is a Threat to A.I. Itself</b><br>The New York Times<br><a href="#">[link]</a>  | August 2024   |
| <b>Breaking MAD: Generative AI could break the internet</b><br>Rice News, Rice University<br><a href="#">[link]</a>   | July 2024     |
| <b>'Cesspool of AI crap' or smash hit? LinkedIn's AI-powered collaborative articles offer a sobering peek at the future of content</b><br>Fortune<br><a href="#">[link]</a> | April 2024    |
| <b>AI's 'mad cow disease' problem tramples into earnings season</b><br>Yahoo!finance<br><a href="#">[link]</a>  | April 2024    |
| <b>'Mad' AI risks destroying the Information Age</b><br>The Telegraph<br><a href="#">[link]</a>   | February 2024 |
| <b>When AI Is Trained on AI-Generated Data, Strange Things Start to Happen</b><br>Futurism<br><a href="#">[link]</a>  | August 2023   |
| <b>Episode 194: Improving integration in machine learning workflows</b><br>Seismic Soundoff Podcast, Society of Exploration Geophysicists<br><a href="#">[link]</a>         | July 2023     |
| <b>Training AI With Outputs of Generative AI Is Mad</b><br>CDOtrends<br><a href="#">[link]</a>  | July 2023     |
| <b>AI trained on AI-generated images produce glitches and blurs</b><br>NewScientist<br><a href="#">[link]</a>   | July 2023     |
| <b>Scientists make AI go crazy by feeding it AI-generated content</b><br>TweakTown<br><a href="#">[link]</a>  | July 2023     |
| <b>AI Loses Its Mind After Being Trained on AI-Generated Data</b><br>Futurism<br><a href="#">[link]</a>   | July 2023     |
| <b>Generative AI Goes 'MAD' When Trained on AI-Created Data Over Five Times</b><br>Tom's Hardware<br><a href="#">[link]</a>   | July 2023     |
| <b>Group Brings Seismic Imaging to Climate-Change Conversations and Beyond</b><br>College of Computing News, Georgia Institute of Technology<br><a href="#">[link]</a>      | August 2022   |