ZIYI (FRANCIS) YIN

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EDUCATION

Georgia Institute of Technology — Atlanta, GA
Doctor of Philosophy in Computational Science and Engineering — Aug 2019 - Present
Advisor: Prof. Felix J. Herrmann
Group: Seismic Laboratory for Imaging and Modeling

Emory University — Atlanta, GA
Bachelor of Science in Mathematics and Computer Science — May 2019
Advisor: Prof. James G. Nagy

RESEARCH INTERESTS

Deep Learning, Inverse Problems, Computational Imaging, Uncertainty Quantification
Applications on Time-lapse Seismic Monitoring of Carbon Capture and Storage (CCS)

RESEARCH EXPERIENCE

Georgia Institute of Technology — Atlanta, GA
Graduate Research Assistant — Aug 2019 - Present

Emory University — Atlanta, GA
Undergraduate Honors Research — May 2018 - May 2019

TEACHING EXPERIENCE

Georgia Institute of Technology — Atlanta, GA
Graduate Teaching Assistant for Seismic Monitoring CO2 Storage — Spring 2022
Head Graduate Teaching Assistant for Computational Data Analysis — Fall 2021
Graduate Teaching Assistant for Exploration Seismology — Spring 2021
Graduate Teaching Assistant for Iterative Methods for Systems of Equations — Fall 2020

Emory University — Atlanta, GA
EPASS Peer Tutor for Probability and Statistics I & II — Fall 2018, Spring 2019
EPASS Peer Tutor for Foundation of Mathematics — Summer & Fall 2018, Spring 2019

ACADEMIC SERVICE

SciMLCon 2022 conference reviewer — Feb 2022

COMMUNITY SERVICE

Georgia Institute of Technology Geophysical Society — Atlanta, GA
President — Oct 2020 - Present
Secretary — Nov 2019 - Oct 2020

Office of Undergraduate Studies, Emory University — Atlanta, GA
Academic Fellow — Aug 2018 - May 2019

HONORS AND AWARDS

SEG Field Camp grant	May 2022
SEG Technical Program Registration grant	Aug 2021
SEG/Chevron Student Leadership Symposium travel grant	Jun 2020
Graduate with Highest Honors (*summa cum laude*), Emory University	May 2019
Phi Beta Kappa Honor Society Membership	Apr 2019
Dean's List, Emory University	Aug 2017 - May 2019

SKILLS

Languages: Python, Julia, MATLAB, Java, C/C++, Bash, SQL, PHP, R, MPI
Machine Learning Libraries: PyTorch, Tensorflow, Flux.jl
Cloud Service Platforms: Amazon Web Services (AWS), Microsoft Azure
Document Preparation Systems: Markdown, LaTeX

TALKS

- "Julia for Geoscience". In: *Transform 2022*. Apr 2022.
- "Improved seismic monitoring of CO2 sequestration with the weighted joint recovery model". In: *ML4Seismic Partners Meeting 2021*. Nov 2021.
- "Compressive time-lapse seismic monitoring of carbon storage and sequestration with the joint recovery model". In: *International Meeting for Applied Geoscience & Energy Session TL 1: "Advances and Case Studies"*. Sep 2021.
- "Low-cost & robust seismic monitoring of carbon storage and sequestration with the joint recovery model". In: *Georgia Tech Geophysics Seminar*. Sep 2021.
- "Edge Detection and Enriched Subspaces". In: *Undergraduate honors thesis defense*. April 2019.

SUBMITTED WORK

- Thomas J. Grady II, Rishi Khan, Mathias Louboutin, Ziyi Yin, Philipp A. Witte, Ranveer Chandra, Russell J. Hewett, and Felix J. Herrmann. "Towards large-scale learned solvers for parametric PDEs with model-parallel Fourier neural operators". April 2022. URL: https://arxiv.org/pdf/2204.01205.pdf.

CONFERENCE PROCEEDINGS

- Ziyi Yin, Ali Siahkoohi, Mathias Louboutin, and Felix J. Herrmann. "Learned coupled inversion for carbon sequestration monitoring and forecasting with Fourier neural operators". Accepted in *International Meeting for Applied Geoscience & Energy Expanded Abstracts*. May 2022. URL: https://arxiv.org/pdf/2203.14396.pdf.
- Mathias Louboutin, Philipp A. Witte, Ali Siahkoohi, Gabrio Rizzuti, Ziyi Yin, Rafael Orozco, and Felix J. Herrmann. "Accelerating innovation with software abstractions for scalable computational geophysics". Accepted in *International Meeting for Applied Geoscience & Energy Expanded Abstracts*. May 2022. URL: https://arxiv.org/pdf/2203.15038.pdf.
- Yijun Zhang, Mathias Louboutin, Ali Siahkoohi, Ziyi Yin, Rajiv Kumar and Felix J. Herrmann. "A simulation-free seismic survey design by maximizing the spectral gap". Accepted in *International Meeting for Applied Geoscience & Energy Expanded Abstracts*. May 2022. URL: https://arxiv.org/pdf/2204.02801.pdf.
- Yuxiao Ren, Philipp A. Witte, Ali Siahkoohi, Mathias Louboutin, Ziyi Yin, and Felix J. Herrmann. "Seismic velocity inversion and uncertainty quantification using conditional normalizing flows". In: *American Geophysical Union Annual Meeting 2021*. Dec 2021. URL: https://agu.confex.com/agu/fm21/meetingapp.cgi/Paper/815883.

- Felix J. Herrmann, Mathias Louboutin, Ziyi Yin, and Philipp A. Witte. "Low-cost time-lapse seismic imaging of CCS with the joint recovery model". In: *2021 IMAGE Workshop on Geophysical Challenges in Presalt Carbonates*. Oct 2021. URL: https://slim.gatech.edu/content/low-cost-time-lapse-seismic-imaging-ccs-joint-recovery-model.
- Ziyi Yin, Mathias Louboutin, Felix J. Herrmann. "Compressive time-lapse seismic monitoring of carbon storage and sequestration with the joint recovery model". In: *First International Meeting for Applied Geoscience & Energy Expanded Abstracts*. Sep 2021. DOI: 10.1190/segam2021-3569087.1.
- Mathias Louboutin, Ziyi Yin, Yijun Zhang, and Felix J. Herrmann. "Sparsity promoting least-squares migration for long offset sparse OBN". In: *2020 SEG Workshop on Promises and Challenges with Sparse Node Ultra-long Offset OBN Acquisition in Imaging and Earth Model Building*. Oct 2020. URL: https://slim.gatech.edu/content/sparsity-promoting-least-squares-migration-long-offset-sparse-obn.
- Ziyi Yin, Rafael Orozco, Philipp A. Witte, Mathias Louboutin, Gabrio Rizzuti, and Felix J. Herrmann. "Extended source imaging, a unifying framework for seismic & medical imaging". In: *SEG Technical Program Expanded Abstracts 2020*. Sep 2020. DOI: 10.1190/segam2020-3426999.1.
- Ziyi Yin. "Edge Detection and Enriched Subspaces". *Undergraduate honors thesis for Bachelor of Sciences with Highest Honors at Emory University*. May 2019. URL: https://etd.library.emory.edu/concern/etds/7w62f916x?locale=en.