

# ZIYI (FRANCIS) YIN

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## EDUCATION

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### 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

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Machine Learning, PDE-constrained Optimization, Inverse Problems, Computational Imaging Applications on Time-lapse Seismic Monitoring of Carbon Capture and Storage (CCS)

## RESEARCH EXPERIENCE

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### Georgia Institute of Technology

Atlanta, GA

*Graduate Research Assistant*

Aug 2019 - Present

Work on wave-equation based imaging and optimization, compressive sensing, uncertainty quantification, physics-informed neural networks, coupling of multi-physics systems, loop unrolling, preconditioning

### Emory University

Atlanta, GA

*Undergraduate Honors Research*

May 2018 - May 2019

Work as undergraduate researcher on X-ray computed tomography imaging, image reconstruction and segmentation, regularization methods on ill-posed inverse problems

## LEADERSHIP EXPERIENCE

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### Georgia Institute of Technology Geophysical Society

Atlanta, GA

*President*

Oct 2020 - Present

*Secretary*

Nov 2019 - Oct 2020

Co-organize academic seminars, industry workshops and panels; present activities on SEG annual meeting

### Office of Undergraduate Studies, Emory University

Atlanta, GA

*Academic Fellow*

Aug 2018 - May 2019

Co-organize freshman orientations; mentor and support 7 first-year international students

## TEACHING EXPERIENCE

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### Georgia Institute of Technology

Atlanta, GA

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

## HONORS AND AWARDS

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

## SKILLS

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Programming: Python, Julia, MATLAB, Java, C/C++, Bash, SQL, PHP, R, MPI, L<sup>A</sup>T<sub>E</sub>X  
 Language: English (Proficient), Chinese (Native), German (Elementary)

## TALKS

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- “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.

## PUBLICATIONS

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- Felix J. Herrmann, Mathias Louboutin, Ziyi Yin, 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](https://doi.org/10.1190/segam2021-3569087.1).
- Yuxiao Ren, Philipp A. Witte, Ali Siahkoobi, Mathias Louboutin, Ziyi Yin, Felix J. Herrmann. “Seismic velocity inversion and uncertainty quantification using conditional normalizing flows”. Submitted to: *American Geophysical Union Annual Meeting 2021*. Aug 2021. URL: <https://slim.gatech.edu/content/seismic-velocity-inversion-and-uncertainty-quantification-using-conditional-normalizing>.
- Mathias Louboutin, Ziyi Yin, Yijun Zhang, 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, 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](https://doi.org/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>.