

# ZIYI (FRANCIS) YIN

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## EDUCATION

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### Georgia Institute of Technology

*Ph.D. in Computational Science and Engineering*

Advisor: [Prof. Felix J. Herrmann](#), GPA: 4.00/4.00

Atlanta, GA

*Aug 2019 - Present*

### Emory University

*B.S. in Mathematics and Computer Science (summa cum laude)*

Advisor: [Prof. James G. Nagy](#), GPA: 3.98/4.00, Major GPA: 4.00/4.00

Atlanta, GA

*Aug 2017 - May 2019*

### Beihang University

*Major: Mathematics*

Beijing, China

*Sep 2015 - Jul 2017*

## RESEARCH INTERESTS

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Machine Learning, Scientific Computing, PDE-constrained Optimization, Inverse Problems

## PUBLICATIONS

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[1] Ziyi Yin, Rafael Orozco, Philipp Witte, et al. “Extended source imaging, a unifying framework for seismic & medical imaging”. In: *SEG Technical Program Expanded Abstracts 2020*. Sep 2020, page 3502-3506, doi: [10.1190/segam2020-3426999.1](https://doi.org/10.1190/segam2020-3426999.1).

## RESEARCH EXPERIENCE

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### Georgia Institute of Technology

*Graduate Research Assistant*

• Advisor: [Prof. Felix J. Herrmann](#)

- Conduct research in SLIM ([Seismic Laboratory for Imaging and Modeling](#)) group on deep learning applications of wave-equation based imaging, such as seismic and photoacoustic imaging
- Design loop-unrolled algorithms for full-waveform inversion problems, combine Krylov-based GMRES solver with convolutional neural network to learn iterative reconstructions
- Focus on extended source imaging with variable projection methods; unroll iterative algorithms for source estimation then generate short-wavelength images by automatic differentiation through iteration histories
- Work on sparsity promoting LS-RTM with Curvelet thresholding; incorporate on-the-fly temporal source estimation and extended source imaging to eliminate multiples in the ocean bottom reflections

Atlanta, GA

*Aug 2019 - Present*

### Pactera Technology International Ltd.

*Machine Learning Intern*

- Engaged in research in Natural Language Processing in the field of machine learning and deep learning models (neural network/ensemble learning)
- Developed highly scalable classifiers according to TensorFlow and BERT to improve the performance of chat bots in a daily communication setting
- Improved the classifiers gradually to extract more ambiguous intents from users' texts in various cases

Dalian, China

*May 2019 - Aug 2019*

### Emory University

*Honors Research*

• Advisor: [Prof. James G. Nagy](#)

- Awarded Highest Honors (Summa Cum Laude) in Applied Mathematics and Statistics
- Conducted individual research on numerical solutions to large-scale ill-posed inverse problems, and applications in X-ray tomography imaging
- Derived Regularized Conjugate Gradient Method in MATLAB, which integrates the image segmentation

Atlanta, GA

*Jul 2018 - Apr 2019*

result as a prior and solves the Tikhonov-regularized least squares problem for image reconstruction

- Wrote honor thesis - [Edge Detection and Enriched Subspaces](#), defended thesis against thesis examination committee and published thesis in Emory Electronic Theses and Dissertations (ETD) Repository

## TEACHING EXPERIENCE

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**Georgia Institute of Technology** Atlanta, GA  
Head Teaching Assistant for CSE/MATH 6644 Iterative Methods for Systems of Equations, *Fall 2020*

**Emory University** Atlanta, GA  
EPASS Peer Tutor for MATH 250/361/362: Foundation of Mathematics, Probability and Statistics I & II, *Summer 2018, Fall 2018, Spring 2019*

## LEADERSHIP EXPERIENCE

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**Society of Exploration Geophysicists** Atlanta, GA  
*Secretary, Georgia Tech Student Chapter* Nov 2019 - Present

- Hold bi-weekly meetings within Schools of Computational Science and Engineering, School of Earth and Atmospheric Sciences, School of Electrical and Computer Engineering
- Invite senior students and outstanding professors to share research projects and give academic talks
- Organize workshops to invite senior students and career advisors to share their internship experiences, help students revise resume and introduce industry relationships
- Make future plans about field trips, SEG event participation, Atlanta science festival and fundings

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

- Co-conducted orientations for Emory Class of 2022 freshmen, and co-hosted info sessions
- Mentored eight international students throughout freshman year regarding both academics and lives

## HONORS AND AWARDS

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- SEG/Chevron Student Leadership Symposium travel grant Jun 2020
- 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

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- Programming: Python, MATLAB, Julia, Java, C/C++, SQL, PHP, R, Assembly,  $\text{\LaTeX}$
- Language: English (Proficient), Chinese (Native), German (Elementary)