

# ZIYI (FRANCIS) YIN

CODA S1363C, 756 West Peachtree Street NW, Atlanta, GA 30308 | ziyi.yin@gatech.edu | (470)342-1400

## EDUCATION

---

### Georgia Institute of Technology

Atlanta, GA

- Ph.D. student in Computational Science and Engineering *Aug 2019 - Aug 2024 (Expected)*
- GPA: 4.00/4.00
- Relevant Coursework: Machine Learning, Exploration Seismology, Imaging with Data-driven Models, Continuous Algorithms with Optimization and Sampling, Iterative Methods for System of Equations

### Emory University

Atlanta, GA

- B.S., Applied Mathematics and Statistics (summa cum laude) | Computer Science *Aug 2017 - May 2019*
- GPA: 3.98/4.00, Major GPA: 4.00/4.00
- Member of Phi Beta Kappa Honor Society
- Relevant Coursework: Iterative Methods for Linear Equations, Partial Differential Equations, Numerical Analysis, Data Structures and Algorithms, Probability and Statistics, Computer Architecture

### Beihang University

Beijing, China

- Concentration: Mathematics *Sep 2015 - Jul 2017*
- Relevant Coursework: Real Analysis, Abstract Algebra, Complex Analysis, Analytical Geometry

## RESEARCH INTEREST

---

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

## RESEARCH EXPERIENCE

---

### Georgia Institute of Technology

Atlanta, GA

#### *Graduate Research Assistant*

*Aug 2019 - Present*

- Advisor: **Prof. Felix Herrmann**
- Conduct research in SLIM (**Seismic Laboratory for Imaging and Modeling**) group on deep learning applications of seismic inversion and imaging
- Focus research on loop-unrolled imaging with neural networks on solving Helmholtz equations, combine traditional Krylov-based iterative solvers with convolutional neural network by parameterizing iteration histories and eventually decrease the error of solution from 13% to 8%
- Work on solving full-waveform inversion problems with variable projection methods; currently work on loop-unrolling variable projection methods by generative adversarial network

### Pactera Technology International Ltd.

Dalian, China

#### *Machine Learning Intern*

*May 2019 - Aug 2019*

- 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

### Emory University

Atlanta, GA

#### *Honors Research*

*Jul 2018 - Apr 2019*

- Advisor: **Prof. James Nagy**
- Awarded Highest Honors (Summa Cum Laude) in Applied Mathematics and Statistics
- Conducted individual research in image segmentation and reconstruction fields, focusing on numerical approximations to large-scale ill-posed inverse problems and Krylov subspace iteration methods
- Derived Modified Conjugate Gradient Method in MATLAB to reconstruct the image from the image

segmentation basis, which highly improved the efficiency and accuracy of the algorithm

- 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

## LEADERSHIP EXPERIENCE

---

### **Society of Exploration Geophysicists**

Atlanta, GA

#### ***Secretary, Georgia Tech Student Chapter***

*Nov 2019 - Present*

- Hold bi-weekly seminars within Schools of Computational Science and Engineering, Earth and Atmospheric Sciences, Electrical and Computer Engineering; invite senior students and outstanding professors to share research projects and intern experiences
- Organize workshops to invite senior students and career advisors to introduce industry relationship, help students revise resume and help practice interview skills
- Make future plans about field trip of seismic experiment, SEG event participation and fundings

### **EPASS Peer Tutoring Program, Emory University**

Atlanta, GA

#### ***Teaching Assistant***

*May 2018 - May 2019*

- Conducted face-to-face sessions for math students up to 6 hours each week
- Review and summarize key points of the course contents
- Explain practice problems and project questions to students

### **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
- Organized two meetings with these eight international students each month regarding starting a new academic life at Emory and blending into the local culture

## SKILLS

---

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