

# Jeremy T. Shahan

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## Contact Info

Department of Mathematics  
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## Research Interests

Numerical Analysis, Unfitted Finite Element Methods (FEM) for PDEs, Shape Optimization, Liquid Crystals.

## Academic Employment

**LOUISIANA STATE UNIVERSITY** Baton Rouge, LA  
Research Assistantship  
Graduate Assistantship

Jan 2023 - Present  
Aug 2020 - Dec 2023

## Education

**LOUISIANA STATE UNIVERSITY** Baton Rouge, LA  
PhD in Mathematics  
“Unfitted Finite Element Methods for Shape  
Optimization and Liquid Crystals”  
Advisor: Shawn W. Walker  
Cumulative GPA: 4.02/4.0;

Aug 2020 - Expected May 2025

(Successfully Defended on Feb. 19, 2025)

**LOUISIANA STATE UNIVERSITY** Baton Rouge, LA  
Masters in Mathematics  
Cumulative GPA: 4.01/4.0;

Aug 2020 - May 2022

**OREGON STATE UNIVERSITY** Corvallis, OR  
Bachelor of Science  
Major in Mathematics; Minor in Computer Science  
Cumulative GPA: 3.88/4.0;

Sep 2017 - Jun 2020

## Awards

3. LSU Pasquale Porcelli Certificate of Excellence in Research (2024)
2. LSU Arthur K. Barton Superior Graduate Student Scholarship (2022)
1. OSU Edward H. Stockwell Award (2019)

## Publications

2. **Jeremy T. Shahan**, Shawn W. Walker, “Unfitted FEM for Landau–de Gennes” *in-preparation*
1. **Jeremy T. Shahan**, Shawn W. Walker, “Shape Optimization with Unfitted Finite Element Methods” *accepted to Journal of Numerical Mathematics* (2024)

## Presentations

5. “Shape Optimization with an Unfitted Finite Element Method,” Finite Element Rodeo, Baton Rouge, LA. (February 22, 2025)
4. “Shape Optimization with an Unfitted Finite Element Method,” JMM, Seattle, WA. (January 9, 2025)
3. “Shape Optimization with an Unfitted Finite Element Method,” SIAM TX-LA Sectional Meeting, Waco, TX. (October 13, 2024)
2. “Shape Optimization with an Unfitted Finite Element Method,” SIAM Annual Meeting, Spokane, WA. (July 8, 2024)

1. "Shape Optimization with an Unfitted Finite Element Method," SCALA, Louisiana State University, Baton Rouge, LA. (January 19, 2024)

## Posters

2. "Shape Optimization with an Unfitted Finite Element Method," ICERM Workshop: PDEs and Geometry: Numerical Aspects, Brown University, Providence, RI. (March, 2024)
1. "Shape Optimization with an Unfitted Finite Element Method," SIAM Texas-Louisiana Sectional Meeting, University of Louisiana at Lafayette, Lafayette, LA. (November, 2023)

## Conferences and Workshops Attended

- Finite Element Rodeo, Louisiana State University, Baton Rouge. (February 21-22, 2025)
- Joint Mathematics Meeting, Seattle, WA. (January 8-11, 2025)
- SIAM TX-LA Sectional Meeting, Baylor University, Waco. (October 11-13, 2024)
- SIAM Annual Meeting 2024, Spokane, WA. (July 8-12, 2024)
- ICERM Workshop: PDEs and Geometry: Numerical Aspects, Brown University, Providence. (March 11-15, 2024)
- Scientific Computing Around Louisiana (SCALA 2024), Louisiana State University, Baton Rouge. (January 19-20, 2024)
- SIAM TX-LA Sectional Meeting, University of Louisiana at Lafayette. (November 3-5, 2023)
- 2023 Gene Golub SIAM Summer School on Quantum Computing and Optimization, Lehigh University, Bethlehem. (July 31 - August 11, 2023)
- IMA Math to Industry Boot Camp. (June 19 - July 28, 2023)
- Finite Element Rodeo, Texas A&M University, College Station. (March 24-25, 2023)
- Scientific Computing Around Louisiana (SCALA 2023), Tulane University, New Orleans. (March 10-11, 2023)

## Teaching Experience

Instructor for Real Analysis (MATH 7311) Review Seminar	Summer 2021, Summer 2024
Teaching Assistant for Real Analysis (MATH 7311)	Fall 2022
Instructor for Differential and Integral Calculus (MATH 1550)	Spring 2022
Teaching Assistant for Differential and Integral Calculus (MATH 1550)	Fall 2021
Instructor for College Algebra (MATH 1021)	Fall 2022
Teaching Assistant for College Algebra (MATH 1021)	Fall 2021
Instructor for Recitation Section of Business Calculus (MATH 1431)	Fall 2020, Spring 2021

## Leadership Activities

LSU SIAM Chapter: President	Jan 2024 - Dec 2024
LSU SIAM Chapter: Vice President	Jan 2023 - Dec 2023

## Programming Skills

Python, Machine Learning Applications in Python (TensorFlow and PyTorch), NGSolve (Open Source Finite Element Package), Linux OS, C/C++, HTML/CSS, Javascript

## Other Professional Experience

Software Intern at Engineerint Design Team (EDT) Jun 2019 - Sep 2019

Worked in a team of two other interns primarily on two projects for the summer. On the first project, we trained a neural network with Pytorch on the Nvidia Jetson Nano to classify images from a live feed. On the second project we had to record, process, and project FM broadcastings with the TACWRAP Vita 49 and uWrap Vita 49.

Teaching Assistant for Linear Algebra II at OSU Winter 2019

Graded homeworks and quizzes while I was an undergraduate at Oregon State.