

# Pratyush Potu

✉ pratyush-potu@brown.edu    🔗 pratyushpotu.github.io

## Research Interests

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Numerical Analysis of Partial Differential Equations, Finite Element Methods

## Education

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### Brown University

Aug 2022 – Present

*Ph. D. Candidate in the Division of Applied Mathematics*

- **Thesis Advisor:** Johnny Guzmán
- **Coursework:** Partial Differential Equations, Numerical Analysis, Computational Fluid Dynamics, Real/Functional Analysis, Probability, Dynamical Systems

### University of Texas at Austin

Aug 2019 – May 2022

*B. Sc. in Mathematics*

- Certificate in Scientific Computation and Data Science

## Publications and Preprints

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1. Ern, A., Guzmán, J., Potu, P., and Vohralík, M. Local  $L^2$ -bounded commuting projections using discrete local problems on Alfeld splits, 2025. <https://arxiv.org/abs/2502.03601>
2. Ern, A., Guzmán, J., Potu, P., and Vohralík, M. Discrete poincaré inequalities: a review on proofs, equivalent formulations, and behavior of constants, 2024. <https://arxiv.org/abs/2412.11796>

## Selected Presentations

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- SIAM Conference on Computational Science and Engineering (CSE25), Fort Worth, TX, Mar. 2025
- AMS Spring Eastern Sectional Meeting, Hartford, CT, Apr. 2025

## Conference and Workshop Attendance

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- Semester Program in Numerical PDEs, ICERM, Providence, RI, Jan.-May 2024
- Finite Element Circus, Brown University, Providence, RI, Apr. 2024
- Finite Element Circus, Bridgewater State University, Bridgewater, MA, Mar. 2023

## Research Experience

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### Graduate Student Research

Jun 2023 - Present

*Brown University*

- Studying the finite element exterior calculus framework and developing novel tools for analysis of related finite element methods.

### Research in Industrial Projects for Students (RIPS)

Jun 2021 - Aug 2021

*Institute for Pure and Applied Mathematics, UCLA*

- Developed a numerical simulation of phase-change phenomenon for application in conductive devices along with three other students.
- Presented this work in a contributed talk at Joint Mathematics Meetings (Apr 2022).

### Undergraduate Student Research

Jun 2020 - Dec 2021

*University of Texas at Austin*

- Conducted data-driven epidemiological simulations of COVID-19 with the UT-Austin COVID-19 Modeling Consortium.
- Studied methods for improving classification tasks in machine learning with Applied Research Laboratories at UT-Austin.

## Teaching and Mentoring Experience

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### Graduate Teaching Assistant

*Sep 2023 - May 2024*

*Brown University*

- Statistical Inference I (Fall 2023)
- Applied Partial Differential Equations I (Spring 2024)

### Directed Reading Program

*Feb 2024 - Present*

*Brown University*

- An extracurricular activity that matches undergraduate students and graduate students with similar interests to participate in a reading project over the course of a semester. Graduate students are responsible for planning the project and mentoring their undergraduate counterpart, including weekly meetings and assistance producing a written proposal and talk.
- Two students mentored: one on the calculus of variations, one on randomized numerical linear algebra.

## Academic Service

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### Society for Industrial and Applied Mathematics Student Chapter

*Sep 2023 - Present*

*President*

- A community of students, postdocs and faculty interested in applied and interdisciplinary mathematics. We organize professional, academic and social events including latex tutorials, industry and internship panels, lightning talks, and competitions.
- Served as Secretary during 2023-2024 academic year.

### Applied Math Graduate Student Seminar

*Sep 2023 - Present*

*Organizer*

- This is a seminar series aimed at showcasing graduate research in Brown Applied Math in an informal setting. Each week a grad student gives a talk about their research or just some interesting mathematics. Audience feedback is also moderated by the organisers to provide an opportunity to learn presentation skills and practice conference talks.

### Division of App. Math. Diversity, Equity, & Inclusion (DEI) Committee

*Sep 2024 - Present*

*Committee Member*

- As a member of the DEI Committee I have worked on a variety of initiatives to foster diversity, equity, and inclusion in the Division. These include discussing inclusive dissemination of resources for career development, contributing to the department DEI action plan, and advocating for changes to the graduate program to better serve all students.

## Skills

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**Software:** Python (numpy, FEniCS), C++ (MFEM)

**Languages:** English, Telugu