

# Varun Gudibanda

 [github.com/VarunMG](https://github.com/VarunMG)

 [varunmg.github.io](https://varunmg.github.io)

## EDUCATION

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### University of Wisconsin-Madison

Expected May 2025

*Ph.D., Mathematics (Computational and Applied Math)*

*Madison, WI*

**Relevant Coursework:** Computational Mathematics, Applied Mathematics, Fluid Dynamics, Stochastic Processes, Quantum Mechanics, Astrodynamics, Atomic Physics

### Carnegie Mellon University

August 2019 - May 2020

*M.S., Mathematics*

*Pittsburgh, PA*

**Relevant Coursework:** Numerical Analysis, Partial Differential Equations, Finite Element Methods, Data Structures and Algorithms

### Carnegie Mellon University

August 2016 - May 2020

*B.S., Mathematics*

*Pittsburgh, PA*

## TECHNICAL SKILLS

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**Languages:** Python, MATLAB, Fortran, C,  $\text{\LaTeX}$ , Wolfram Mathematica, and Git.

## RESEARCH EXPERIENCE

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### Graduate Student

Spring 2021-Present

*University of Wisconsin-Madison*

*Madison, WI*

- Investigating Rayleigh-Bernard convection of fluids with internal heating.
- Analyzed the system through numerical simulations with the Dedalus library in Python.

### NOMAD Research Internship

June 2023-August 2023

*Sandia National Laboratories*

*Albuquerque, New Mexico*

- Implemented postprocessing effects into a workflow to reduce distortion in metal additive manufactured components

### NASA Pennsylvania Space Grant Consortium

Summer 2019

*Carnegie Mellon University*

*Pittsburgh, PA*

- Developed novel energy-stable numerical methods for the Q-tensor model of liquid crystals and implemented the method in MATLAB, resulting in a publication [[arXiv:2012.00278](https://arxiv.org/abs/2012.00278)].

### Summer Undergraduate Research Fellow

Summer 2018

*Carnegie Mellon University*

*Pittsburgh, PA*

- Conducted modal simulations of the inverted flag system - a cantilevered beam interacting with a surrounding fluid implemented in MATLAB, resulting in a publication [[arXiv:1910.06918](https://arxiv.org/abs/1910.06918)].
- Acquired the fellowship for \$3500 summer research funding.

## COMMUNITY AND MENTORING

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### Graduate Applied Math Seminar

Fall 2023 - Present

*Co-Organizer and Co-Founder*

*Madison, WI*

- Founded a weekly seminar for graduate students in applied math as an opportunity for gaining talk and presentation experience
- Corresponded with students in the department to find speakers for the seminar and communicate with members of the seminar about seminar events

### Madison Experimental Mathematics

Spring 2024

*Mentor*

*Madison, WI*

- Mentored four undergraduate students on a fluid dynamics research project and helped them produce a talk and present at a poster session

### Graduate Peer Mentoring Program

Fall 2023-Present

*Volunteer*

*Madison, WI*

- Advised new first year graduate students entering the department about how to navigate the PhD program in terms of coursework, finding an advisor, and getting accustomed to the Madison environment

## Undergraduate Mentoring Program

Fall 2022

*Volunteer*

*Madison, WI*

- Advised undergraduate students on finding research and internship opportunities as well giving graduate application advice

## University of Wisconsin, Madison Math Circle

Spring 2021 - Fall 2022

*Volunteer*

*Madison, WI*

- Oversaw meetings and ensured the smooth running of talks given to engage local middle school students in mathematics.

## Mega Math Competition

Spring 2022, Spring 2023

*Volunteer*

*Madison, WI*

- Formulated problems for a middle school math competition for 19 middle schools in the general Wisconsin area.

## Carnegie Mellon University Math Club

Spring 2018 - Spring 2020

*Secretary*

*Pittsburgh, PA*

- Communicated with members about meetings, activities, and other mathematical opportunities.
- Helped create activities for meetings and schedule meetings.

## AWARDS

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### Outstanding TA Award

2020-2021

*University of Wisconsin, Madison*

*Madison, WI*

- Attained for demonstrating excellence in teaching over multiple semesters.

### Outstanding Poster Award

Spring 2019

*Joint Mathematics Meetings*

*Baltimore, MD*

- Awarded for poster about research on Inverted Flag System during the Undergraduate Poster Session.

## TALKS AND POSTERS

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### Rayleigh-Bernard Convection

Spring 2022

*Carnegie Mellon University Math Club*

*Pittsburgh, PA*

### Dynamics of the Inextensible Inverted Flag with Piston-Theoretic Forcing Term

Spring 2019

*Joint Mathematics Meetings*

*Baltimore, MD*

### 2 Talks at Graduate Applied Mathematics Seminar

Fall 2023, Spring 2024

## MISCELLANEOUS

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### Former Top 200 in US at Rubik's Cube Blindfolded

Summer 2016

*US Nationals Rubik's Cube Competition*

*Portland, OR*

## REFERENCES

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### Leslie Smith

✉ [lsmith@math.wisc.edu](mailto:lsmith@math.wisc.edu)

☎ (608) 263-3057

*Doctoral dissertation advisor in the Department of Mathematics at the University of Wisconsin-Madison from fall 2021 to present on fluid dynamics of heat convection.*

### Franziska Weber

✉ [fweber@math.berkeley.edu](mailto:fweber@math.berkeley.edu)

*Masters advisor in Department of Mathematics at Carnegie Mellon University from Summer 2019 through Spring 2020 on numerical analysis of a particular model of liquid crystals.*