

# Gokul Bhusal

Email: [bhusalgo@msu.edu](mailto:bhusalgo@msu.edu)

Website: <https://gokulbhusal.github.io/>

## Education

---

### Michigan State University

*Doctoral candidate in Applied Mathematics*

*Thesis Advisor: Dr. Ekaterina Merkurjev*

*East Lansing, MI*

*August 2020 - May 2025 (Expected)*

### The University of Southern Mississippi

*B.S. Mathematics & Minor in Computer Science, Magna cum laude*

*Advisor: Dr. Zhifu Xie*

*Hattiesburg, MS*

*August 2016 - May 2020*

## Research Interests

---

Graph Machine learning, Semi-supervised learning, Image processing.

## Publications

---

- Deep learning-based method for Hyperspectral Unmixing, with Ekaterina Merkurjev (MSU), Cristina Garcia-Cardona (Los Alamos), and Yifei Lou (UNC) (In preparation)
- MALADY: Multistage Active Learning with Auction Dynamics on Graphs, with Ekaterina Merkurjev (MSU), and Kevin Miller (UT Austin) (In preparation)
- **Gokul Bhusal**, Ekaterina Merkurjev, Guo-Wei Wei, Persistent Laplacian-enhanced Algorithm for Scarcely Labeled Data Classification. (Submitted)
- Zhifu Xie, **Gokul Bhusal**, Hamas Tahir, Central Configurations in the Planar 6-body Problem Forming Two Equilateral Triangles, *Journal of Geometry and Physics*.

## Honors and Awards

---

2024	TA Award for Excellence in Teaching - Department of Mathematics at MSU
2024	Herbert T.Graham Scholarship - MSU-Math (\$2,125)
2023	Outstanding Scholar Fellowship - College of Natural Science, MSU (\$7,500)
2020	Early Start Fellowship - College of Natural Science, MSU. (\$6,000)
2018	Placed 2nd in Louisiana/Mississippi region's Mathematical Association of American Competition for research paper competition.
2018	Received travel grant to present poster presentation in JMM 2018 (\$500)
2018	Nominated for the College of Science and Technology's Outstanding Sophomore Award, USM

## Invited Talks/Conference Presentations/Posters

---

- Student Applied Mathematics Seminar, Michigan State University, April 2024 (Oral Presentation)
- SIAM Great Lakes Meeting, Michigan State University, Oct 14, 2023 (Invited talk).
- LA/MS Mathematical Associations of America, Loyola University New Orleans, February 2020 (Oral Presentation)
- USA/USM/SELU Math and Physics Research Mini-Conference, Gulf Park, MS, April 2019 (Oral Presentation)
- Joint Mathematics Meeting San Diego, CA, January 2018 (Poster Presentation)

- Undergraduate Symposium on Research and Creative Activity, Hattiesburg, MS, March 2018 (Poster Presentation)

---

### *Conference/Seminar Organization*

- Co-organizer (with Edem Boahen) of Student Applied Mathematics seminar, MSU, Fall 2023 - present.

---

### *Teaching Experience*

- Summer 2024: Teaching Assistant for Matrix Algebra with Computational Applications (Math 314), MSU
- Spring 2024: Teaching Assistant for Numerical methods for ODE (Math 852), MSU
  - Qualifying exam course. Hosted weekly qual-prep recitations.
- Fall 2023: Teaching Assistant for Numerical Analysis I (Math 850), MSU
  - Qualifying exam course. Hosted weekly qual-prep recitations.
- Spring 2023: Teaching Assistant for Matrix Algebra with Computational Applications (Math 314), MSU
- Fall 2022: Recitation Instructor for Calculus II (Math 133), MSU
- Summer 2022: Instructor of record for Calculus I (Math 132), MSU
- Spring 2022: Recitation Instructor for Calculus II (Math 133), MSU
- Fall 2021: Recitation Instructor for Calculus II (Math 133), MSU
- Summer 2021: Recitation Instructor for Calculus II (Math 133), MSU

---

### *Outreach*

- Volunteer at MSU Science Festival, April 2024.
- Volunteer at math outreach programs, Marble Elementary School Math Night, November 16, 2023.
- Served as an instructor in the TRIO SSS program (Summer 2023).
- Served as an instructor in the TRIO SSS program (Summer 2022).

---

### *Summer school and Workshop attended*

- Optimal Transport Through the Midwest summer school, University of Wisconsin Madison, July 15 - July 19, 2024
- Winter School in Machine Learning 2024, UT-Austin January 15-19, 2024
  - Mathematics of adversarial machine learning
  - Tensor Methods in Data Science
- Research Experience for Undergraduate (REU) 2019 June 03 - July 19  
 School of Mathematics and Natural Sciences, The University of Southern Mississippi, Hattiesburg, MS  
 Topic: Allee Effects in a Predator-prey Model with Holling type-IV functional Response.

- Research Experience for Undergraduate (REU) 2017 June 19 - August 4  
School of Mathematics and Natural Sciences, The University of Southern Mississippi, Hattiesburg, MS  
Topic: Stacked Central Configuration for 6-body Problem.

*Relevant Skills*

Proficiency	MATLAB, HPCC Environments, C++, Python, L <sup>A</sup> T <sub>E</sub> X.
Familiarity	Maple.

*Services and Professional Organization*

- **Secretary**, American Math Society, MSU chapter, Fall 2023–Spring 2024
- **Treasurer**, Nepali student Association, Summer 2021–Fall 2022
- **Member**, AMS, Fall 2020 – Present.
- **Member**, SIAM, Fall 2016 – Present.
- **Treasurer** Kappa Mu Epsilon, Fall 2018– Spring 2020

*Selected Graduate Coursework*

• Measure theory	ence	tion
• Complex analysis	• Topological Data Analysis	• Harmonic Analysis
• Numerical linear algebra	• Machine Learning	• Sublinear-Time Algorithms and SFTs
• Numerical methods for ODE	• Graph Theory	• Parallel Computing (Spring 2024)
• Introduction to PDE (two semesters)	• Deep Learning	• Hamilton–Jacobi Equation (Spring 2024)
• Mathematics of Data Sci-	• High Dimensional Probability	
	• Computational Optimiza-	