Pitambar Acharya

Ph.D. Candidate in Applied Mathematics

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Ph.D. candidate in Applied Mathematics with extensive undergraduate teaching experience in Precalculus, Calculus, Probability, Statistics, Linear Algebra, and foundational mathematics courses. Committed to student-centered teaching, fostering mathematical understanding, and creating an inclusive and engaging learning environment. Research expertise in nonlinear partial differential equations, mathematical modeling, computational mathematics, data science, and machine learning, with a strong interest in integrating real-world applications into undergraduate mathematics education.

Research Interests

Partial Differential Equations • Data Science • Machine Learning • Scientific Computing

Education

Aug 2022 – Expected Spring 2027	**PhD in Applied Mathematics** University of Alabama at Birmingham, Birmingham, AL Advisor: Prof. Yanni Zeng Minor: Computer Science
Aug 2025	**Master of Science in Mathematics** University of Alabama at Birmingham, Birmingham, AL
Jan 2020 – Jul 2022	**Master of Science in Applied Statistics** Florida Atlantic University, Boca Raton, FL Advisor: Prof. Hongwei Long
2012 – 2014	**Master of Science in Pure Mathematics** Tribhuvan University, Kirtipur, Kathmandu, Nepal
2010 – 2012	**Master of Science in Physics** Tribhuvan University, Kirtipur, Kathmandu, Nepal Advisor: Prof. Jeevan Nakarmi
2007 – 2010	**Bachelor of Science in Physics** Trichandra College, Ghantaghar, Kathmandu, Nepal Minor: Mathematics and Statistics

Teaching Experience

Aug 2022 – Present

Instructor of Record
University of Alabama at Birmingham, Birmingham, AL

- Precalculus: Algebra/Trigonometry (MA 107 QL) – Summer 2026
- Calculus I (MA 125/125L) – Spring 2026, Spring 2027
- Precalculus: Trigonometry (MA 106) – Fall 2026, Spring 2025, Fall 2024
- Introduction to Statistics (MA 180) – Fall 2025, Summer 2025
- Precalculus: Algebra (MA 105) – Spring 2024, Fall 2023, Spring 2023
- Intermediate Algebra (MA 102) – Fall 2022

Aug 2022 – Present

Graduate Teaching Assistant
University of Alabama at Birmingham, Birmingham, AL

- Tutored and proctored exams in the Math Learning Lab (MLL)

Jan – May 2022

Instructor of Record
Florida Atlantic University, Boca Raton, FL

- Methods of Calculus – Spring 2022

Jan 2020 – Jul 2022

Graduate Teaching Assistant
Florida Atlantic University, Boca Raton, FL

- Calculus II (MAC 2312) – Spring 2021, Fall 2020
- Calculus I (MAC 2311) – Spring 2020
- Engineering Mathematics I (MAP 3305) – Summer 2020
- Intermediate & College Algebra: quizzes and midterms – Fall 2021
- Tutor, Engineering Mathematics and Mathematics for Liberal Arts – Summer 2021
- Tutored and proctored exams in the Math Learning Center (MLC)
- Recitation Leader for Calculus II and III

Jun 2015 – Dec 2019

Lecturer
Himalaya College of Engineering (Tribhuvan University), Nepal

- Probability and Statistics, Statistic I & II
- Engineering Mathematics (covers Calculus I, II & III, Linear Algebra, Differential Equations)
- Engineering Physics (lectures and labs): Civil, Architecture, Computer, and Electronics Engineering students

Jun 2015 – Dec 2019

Adjunct High School Teacher
Kathmandu Model Higher Secondary School, Kathmandu, Nepal

- Basic Mathematics for Grade 11 & 12

Publications

[1] **P. Acharya**, and Y. Zeng: "Global Existence of Solutions on the Quarter Plane for a Chemotaxis Model with Logistic Growth and Logarithmic Sensitivity," *Manuscript in preparation*, University of Alabama at Birmingham.

[2] K. Acharya and **P. Acharya**. "Adaptive Filtering via Canonical Systems with Time-Varying Hamiltonians." *International Journal of Advances in Engineering Sciences and Applied Mathematics* (Springer Nature), 18, 20–30 (2026). DOI: 10.1007/s12572-026-00421-5

[3] E. P. Poudel, **P. Acharya**, J. Kafle, and S. Khadka. "On One-Dimensional Advection–Diffusion Equation with Variable Diffusivity." *Applied Mathematics: A Journal of Chinese Universities* (Springer Nature), 41, 181–193 (2026). DOI: 10.1007/s11766-026-5149-9

[4] D. Dulal, M. Gallagher, C. Navasca, **P. Acharya** and N. Skowronski. "Leveraging Advanced Machine Learning to Predict Turbulence Dynamics From Temperature Observations at an Experimental Prescribed Fire." *IEEE Access*, 14, 112481-112498 (2026. DOI:10.1109/ACCESS.2026.3715743.

[5] D. Bastola, **P. Acharya**, D. Dulal, and P. BK. "Predator–Prey Dynamics from Growth Cycles to Financial Instability: Deterministic Structure and Stochastic Fragility." *Journal of Applied Mathematics, Statistics, and Computational Sciences*, 1(1), 13–35 (2026). DOI: 10.32674/r6q0q332

[6] E. P. Poudel, **P. Acharya**, J. Kafle, and S. Khadka. "Modeling and Analysis of Two-Dimensional Contaminant Dispersion in Turbulent Atmospheric Flows." Submitted to *Electronic Journal of Differential Equations*.

[7] D. Bastola, **P. Acharya**, and D. Dulal. "Predicting Anemia Among Under-Five Children in Nepal Using Machine Learning and Deep Learning." Submitted to *Public Health Nutrition*. Preprint

[8] **P. Acharya**, K. Acharya, and D. Bastola. "Random Schrödinger Operators on Data Graphs: A Data Science Perspective on Robust Spectral Embedding." Manuscript in preparation.

Additional Research and Projects

[1] **P. Acharya**, L. Zeng, and M. Islam. "Comparative Analysis of Data Mining Techniques for Customer Segmentation and Anomaly Detection." Graduate final project.

[2] M. Islam, H. Akther Samia, **P. Acharya**. "Bin Packing Problem with Machine Learning Techniques." View Project

[3] **P. Acharya**, O. Francis, and M. Islam. "Deep Q-Learning for Optimizing Bin Packing Problem: A Deep Reinforcement Learning Approach."

Presentations

Aug 2025	"Learning the Solution Operator of the Heat Equation." Summer School on Scientific Machine Learning, Brin Mathematics Research Center, University of Maryland, College Park
Feb 2025	"On One-Dimensional Advection–Diffusion Equation with Variable Diffusivity." MAA–FTYCMA Joint Conference, Embry-Riddle Aeronautical University, Daytona Beach
May 2022	"Bayesian Model Averaging: An Overview." MS Presentation, Florida Atlantic University, Boca Raton, FL

Conferences & Workshops Attended

Selected Conferences (recent)

- Fourth Annual Joint Alabama – Florida Conference on Differential Equations, Dynamical Systems & Applications (JAF DEDS) – FIU, May 2026
- 37th Annual UA System Applied Mathematics Meeting – UAH, Nov 2025
- 3rd UNCG Virtual PDE Conference – UNC Greensboro, Oct 2025
- Ohio River Analysis Meeting (ORAM 14) – University of Cincinnati, Mar 2025
- Southeastern Analysis Meeting (SEAM 41) – University of South Florida, Mar 2025
- Modeling and Simulations in Fluids – Brown University (ICERM), Sep 2024
- Joint Mathematics Meetings (JMM) – Boston, MA, Jan 2023

Summer Schools & Workshops

- Summer School: Scientific Machine Learning – Brin MRC, University of Maryland, Aug 2025
- Texas Summer School in Mathematical Physics – Texas A&M University, Jun 2025
- Texas Summer School in Mathematical Physics – Texas State University, Jul 2023
- CIMPA Summer School: Data Visualization, Modeling and Mathematical Tools – Tribhuvan University, Nepal, May 2023 *(Organizing Committee Member)*

Leadership & Service

Aug 2024 – Present	**Secretary** – SIAM Student Chapter, UAB
Aug 2022 – Present	**Executive Member** – Nepalese Students Association, UAB
Jul 2019	**Deputy Leader** – International Mathematics Olympiad (IMO), Bath, United Kingdom
Jul 2017	**Deputy Leader** – International Mathematics Olympiad (IMO), Rio de Janeiro, Brazil
Feb 2017 – Dec 2019	**Vice President** – Mathematical Association of Nepal (MAN) • Trained high school students for the National Mathematics Competition • Conducted examinations and prepared students for IMO • Organized national and international conferences
Aug 2020 – 2021	**Vice President** – Nepalese Students Association, FAU

Community Outreach

- Alabama Statewide High School Mathematics Contest – Feb 2026
- Math Talent Search Grader and Proctor – Oct 2025
- Alabama Statewide Math Ciphering Contest – Apr 2025

- High School Science Exhibition Judge, Birmingham, AL – Jul 2023
- Kangaroo Mathematics Competition, UAB – Mar 2023
- Math Day Proctoring and Grading, FAU – Jan 2021
- High School Science Olympiad, FAU – Feb 2020
- Blood Donation Program, Kanti Children's Hospital, Kathmandu, Nepal
- Donated stationery and sports materials for cancer-affected children, Kanti Hospital, through Astitwo Foundation, Nepal

Awards & Honors

Apr 2025	James Robert Ward, Jr. Memorial Endowed Award ($1,500) for excellence in Graduate Studies in Differential Equations / Mathematical Biology – UAB
Mar 2025	Travel Award ($563.61) – Ohio River Analysis Meeting, University of Cincinnati
Jun–Jul 2024	Professional Development Stipend ($1,000) – Blazer Core Curriculum, UAB
Jul 2023	Travel Award ($1,066) – Texas Summer School in Mathematical Physics, Texas State University
2022 – Present	Graduate Scholarship / Graduate Teaching Assistantship – UAB
2020 – 2022	Graduate Scholarship / Graduate Teaching Assistantship – FAU
2012 – 2014	MS Fellowship, Central Department of Mathematics, Tribhuvan University
2010 – 2012	MS Fellowship, Central Department of Physics, Tribhuvan University

Technical Skills

Teaching/Computer Technology	Canvas, Pearson(MyMathLab/MyStatLab), Webassign, MyOpenMath, StatCrunch, Zoom, Latex, Word, Excel, PowerPoint, Mathematica
Programming Languages	Python, R, MATLAB, SQL, Minitab
Python Libraries	Pandas, NumPy, Matplotlib, SciPy, Scikit-learn, TensorFlow, Keras
Deep Learning	PyTorch (building and training neural networks)
Tools & Platforms	Git, Linux, Jupyter Notebook, AWS, GCP
Statistical Software	R (ggplot2), Minitab

Professional Memberships

- American Mathematical Society (AMS)
- Society for Industrial and Applied Mathematics (SIAM)

- Nepal Mathematical Society (NMS)
- Nepal Physical Society (NPS)
- Association of Nepalese Mathematicians in America (ANMA)

Professional Development

- Data Science and Machine Learning: Making Data-Driven Decisions – MIT Institute for Data, Systems, and Society (MIT IDSS) - Certificate of Completion
- CTL LIFT Teaching Certificate – Center for Teaching and Learning, UAB
- Developing Great Presentations – UAB Learning and Development, May 2025
- Flex/Online Teaching Orientation – Centre for Online and Continuing Education (COCE), FAU
- Teaching Assistant Basics for Online Courses – COCE, FAU
- Inquiry-Based Learning Workshop – Department of Mathematical Sciences, FAU
- CRLA Certification Levels 1 & 2 – Mathematics Learning Center, FAU
- 14th Annual iLead Conference – Student Union Hall, FAU