

# MAMTA SAINI

Indian Institute of Science, Bangalore, India  
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## RESEARCH INTEREST

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My research interests focus on Scientific Machine Learning, particularly in developing Physics-Informed Neural Networks (PINNs) and Neural Operators with applications in fluid dynamics, electromagnetics, and computational physics.

## EDUCATION

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**National Institute of Technology Kurukshetra, Haryana** *August 2023 - May 2025*  
Master of Science in Mathematics *CGPA: 8.87/10*  
Thesis: **Study of Fractional Physics Informed Neural Networks for Time Fractional Equations**  
(with Prof. A.S.V. Ravi Kanth)

**ARSD, University of Delhi, New Delhi** *August 2020 - May 2023*  
Bachelor of Science in Mathematics (Honours) *CGPA: 8.5/10*

## RESEARCH EXPERIENCE

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**Indian Institute of Science, Bangalore** *May 2025 – Present*  
*Scientific Machine Learning Engineer, Zenteiq.ai*  
*Advisors: Prof. Sashikumaar Ganesan*

- Developing Physics-Informed Neural Networks (PINNs) and Geometry-Informed Neural Operators (GIONOs) for accurate prediction of magnetic fields in stator geometries.

**National Institute of Technology, Kurukshetra** *May 2024 – July 2024*  
*Research Scholar*  
*Advisors: Prof. A.S.V. Ravi Kanth*

- Conducted research on Physics-Informed Neural Networks (PINNs) for solving time-fractional and nonlinear PDEs. Implemented PINNs in TensorFlow for Burgers–Huxley and Convection–Diffusion equations.

**National Institute of Technology, Kurukshetra** *Aug 2023 – May 2024*  
*Research Intern*  
*Advisors: Dr. Harshita Madduri*

- Conducted comparative study of numerical solvers for ODEs and PDEs. Analyzed accuracy, convergence, and computational efficiency. Presented results through numerical experiments on classical PDEs.

## RELEVANT COURSEWORK

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**Fluid Mechanics:** Advanced Fluid Dynamics, Dynamics system and Control  
**Mathematics:** Linear Algebra, Sequence and Series, Univariate Calculus, Ordinary Differential Equations & Multivariate Calculus, Vector Calculus & Partial Differential Equations, Probability & Statistics, Discrete Mathematics  
**Computational Science & Programming:** Computational Fluid Dynamics, Numerical Methods & Computer Programming (Python), Introduction to Machine Learning (NPTEL), Data Analytics with Python

## TECHNICAL SKILLS

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- **Languages:** Python
- **Scientific Computing** - Gmsh, ParaView, CUDA
- **Data Science** - TensorFlow, Scikit-learn, NumPy, Pandas, Matplotlib, SciPy, SymPy
- **Research Tools** - Git,  $\text{\LaTeX}$ , VSCode, Vim, Jupyter, Markdown, GitHub Actions, ClearML

## PROFESSIONAL DEVELOPMENT

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- **International Conference on Applied AI and Scientific Machine Learning (CASML) 2024**,  
Indian Institute of Science Bangalore *18-22 December, 2024*

## LEADERSHIP & ACHIEVEMENTS

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- **Founder & President**, Anant: The Mathematical Society, NIT Kurukshetra (2023-2025)
- **Placement Coordinator**, NIT Kurukshetra (2024-2025)
- **Ex-Core Head**, National Service Scheme, Delhi University
- **Winner**, Tug of War Sports meet, 2023