# Dr. Nitish Gupta

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## Summary

I have a strong background in applied engineering mathematics, with a particular emphasis on fluid dynamics and heat transfer. My research has primarily focused on thermally developing regions and local thermal non-equilibrium (LTNE) phenomena, where I have investigated the effects of axial conduction and viscous dissipation on thermal behavior. I employ numerical techniques, particularly the finite difference method, to solve complex thermal energy equations with applications spanning heat exchangers, electronics cooling, energy conversion systems, and porous media. I am deeply committed to academic excellence and advancing research with real-world impact. As I move forward, I intend to integrate Artificial Neural Networks (ANN) and Physics-Informed Neural Networks (PINN) into my work to enhance the modeling and simulation of complex engineering systems, thereby contributing to the development of more efficient and intelligent thermal management solutions.

## Education

- **Doctor of Philosophy (Ph.D.) in Mathematics**, National Institute of Technology (NIT) Warangal (2019–2024), Specialization: Fluid mechanics, Numerical heat transfer
  Advisor: Prof. D. Bhargavi
  Thesis: *Enhancing Heat Transfer in the Developing Thermal Field in a Fluid Saturated Porous Filled Duct with Local Thermal Non-equilibrium*
- **Master of Science (M.Sc.) in Mathematics**, National Institute of Technology (NIT) Warangal (2015–2017), CGPA: 8.13/10
  Thesis: *Study of Fluid Flow in Wavy Wall Channel*
- **Bachelor of Science (B.Sc.)**, Chhatrapati Shahu Ji Maharaj University, Kanpur, Uttar Pradesh (2011–2014), 60.17%
- **Intermediate ($12^{th}$ Standard)**, Board of High School and Intermediate Education Uttar Pradesh (2010–2011), 73.0%
- **High School ($10^{th}$ Standard)**, Board of High School and Intermediate Education Uttar Pradesh (2008–2009), 64.5%

## Computer Skills

**Software and Math Packages:** FORTRAN, Mathematica, Origin, LaTeX, Python, MATLAB; **Operating Systems:** Windows, Linux

## Achievements

- Received the **Best Paper Award** at the International Conference on Advancements in Materials, Manufacturing, and Automation, for the paper "An Analytical Study of the Impact of an Inclined Magnetic Field on Couette Flow with Jeffrey Fluid under Local Thermal Non-Equilibrium (LTNE) and Viscous Dissipation", (during 7-9 Apr 2023)
- Ministry of Education (MoE) Scholarship for Ph.D. Research (2019–2024)
- Qualified GATE-2019 and IIT JAM-2015

## Research Interests

Porous Structures, Thermal Analysis, Geothermal Convection, Biofluid Mechanics, Stability Analysis, Neural Networks, Numerical Methods

## Academic Experience

- **Assistant Professor**, SRM Institute of Science and Technology, Kattankulathur, Chennai, India. (July 2025 – Present)
- **Postdoctoral Fellow**, Indian Institute Of Technology (IIT) Bhubaneswar, India. (May 2025 – July 2025)
- **Assistant Professor**, Lovely Professional University (LPU), Punjab, India. (Jul 2024 – May 2025)
- During Ph.D. (2019 – 2024) at National Institute of Technology (NIT) Warangal, India:
  - Guided 3 M.Sc. projects (1 published)
  - Assisted in grading, viva, lectures, organizing academic events

## Teaching Experience

**UG course (in SRM University):** Calculus and Linear Algebra (21MAB101T), Transforms and Boundary Value Problems (21MAB201T)(July 2025- Present)
**UG course (Subject taught in LPU):** Probability and Statistics (MTH-302) with practical applications using Excel for data analysis and visualization (July 2024- May 2025)
**UG/PG courses (Subject taught during PhD):** Complex Analysis, Numerical Analysis, Algebra
**Laboratory Courses (Lab. taken during PhD):** Mathematica, FORTRAN, MATLAB

## Publications (21 Published/Accepted)

### Articles In Peer-reviewed International Journals (SCI/SCIE/SCOPUS/WoS Indexed: 14 Published/Accepted)

1. **Nitish Gupta**. "Computational Analysis of Magnetic Field and Porous Fraction Interactions on Developing Thermal Field in Parallel Plate Channels: Featuring a Central Porous Layer Under a Non-Linear Flow Framework." *Numerical Heat Transfer, Part B: Fundamentals*, 2025. **[SCI/SCIE and SCOPUS: Q3, IF 1.7] (ACCEPTED)**
2. **Nitish Gupta**, D. Bhargavi, and K. Vajravelu. "Comparative investigation of axial conduction and viscous dissipation in the entry area: a computational analysis within the local thermal non-equilibrium structure." *Numerical Heat Transfer, Part A: Applications*, 2025. **[SCI/SCIE and SCOPUS: Q2, IF 2.8] (ACCEPTED)**
3. **Nitish Gupta**, D. Bhargavi, and K. Vajravelu. "Viscous dissipation impacts on a developing thermal field in a saturated porous medium" *Physics of Fluids*, 2024; 36(12). **[SCI/SCIE and SCOPUS: Q1, IF 4.3]**
4. **Nitish Gupta**, K. Vajravelu. "Maximal transport of non-Newtonian fluid in an anisotropic rotating porous channel with an inclined magnetic field" *Physics of Fluids*, 2024; 36(9). **[SCI/SCIE and SCOPUS: Q1, IF 4.3]**
5. **Nitish Gupta**, D. Bhargavi, O. D. Makinde. "Heat transfer in a MHD couple-stress fluid in a channel filled with porous material: A computational analysis" *International Communications in Heat and Mass Transfer*, 2024; 155:107586. **[SCI/SCIE and SCOPUS: Q1, IF 6.4]**
6. D. Bhargavi, Rishav Aich, and **Nitish Gupta**. "Thermal enhancement of couple stress fluid flow through anisotropic porous media" *Physics of Fluids*, 2024; 36(4). **[SCI/SCIE and SCOPUS: Q1, IF 4.3]**

7. **Nitish Gupta**, D. Bhargavi, K. Vajravelu, and P.A.L. Narayana."A study on MHD Couette flow in a duct filled with porous materials at the thermal entrance and local thermal non-equilibrium effects" *The European Physical Journal Plus*, 2024; 139:681. **[SCI/SCIE and SCOPUS: Q2, IF 2.9]**
8. D. Bhargavi, A. Kumar, P.A.L. Narayana, **Nitish Gupta**. "An Analytical Study of Fluid Flow Through a Porous Filled Channel with Permeable Wall: Suction/Injection Wall Conditions" *Journal of Nanofluids*, 2024; 13:371–380. **[ECIE and SCOPUS: Q2, IF 2.7]**
9. **Nitish Gupta**, D. Bhargavi. "An Analytical Study of the Impact of an Inclined Magnetic Field on Couette Flow with Jeffrey Fluid under Local Thermal Non-Equilibrium (LTNE) and Viscous Dissipation" *Applied Mechanics and Materials*, 2024: 919. **[SCOPUS/WoS]**
10. **Nitish Gupta**, D. Bhargavi. "Impact of magnetic field on heat transfer with viscous dissipation at the conduction limit in a channel with a centred porous layer: constant wall temperature" *Multidisciplinary Science Journal*, 2024; 6:e2024ss0109. **[SCOPUS: Q4]**
11. **Nitish Gupta**, D. Bhargavi. "Numerical investigation of heat transfer in a developing thermal field in the porous-filled duct under local thermal nonequilibrium: Constant wall heat flux" *Special Topics and Reviews in Porous Media*, 2023; 13:49–81.**[ESCI and SCOPUS: Q3, IF 2.9]**
12. D. Bhargavi, **Nitish Gupta**, O. D. Makinde. "A numerical study of axial conduction in a fluid-saturated porous-filled duct under a local thermal non-equilibrium model" *Special Topics and Reviews in Porous Media*, 2023; 14:73–89. **[ESCI and SCOPUS: Q3, IF 2.9]**
13. **Nitish Gupta**, D. Bhargavi. "Effect of Magnetic Field on the Developing Thermal Field in a Duct Filled with Porous Media under Local Thermal Non-Equilibrium with a Nonlinear Flow Model" *Journal of Advance Research in Fluid Mechanics and Thermal Sciences*, 2023; 103:87–104. **[SCOPUS: Q3]**
14. A. Gupta, R. S. Reddy, B. M. Girish, **Nitish Gupta**. "Nonlinear Transient Analysis of the Plate with Active Constrained 0-3 Viscoelastic Composite Layer Using Fractional Order Derivative Model" *NanoWorld Journal*, 2023; 9(S1):S508–S512. **[SCOPUS: Q4]**

### Book Chapters (SCOPUS Indexed: 5 Published/Accepted)

1. **Nitish Gupta**, "Impact of magnetic field at the entrance region of porous filled duct under the LTNE model with viscous dissipation and axial conduction", *Springer Proceedings in Mathematics and Statistics*, Springer, Singapore, 2025. **(Article in Press)**
2. **Nitish Gupta**, D. Bhargavi, "Casson Fluid Flow in a Duct with Iso-Thermal Walls Under the Local Thermal Non-equilibrium Framework: Temperature Distribution", *Springer Proceedings in Physics*, Springer, Singapore, 2024.
   Hardcover ISBN 978-3-031-69133-1.
3. D. Bhargavi, Shantanu, **Nitish Gupta**, "The Investigation of Squeezing Flow Through a Porous Medium Between Parallel Plates Using the Homotopy Perturbation Method", *Springer Proceedings in Physics*, Springer, Singapore, 2024.
   Hardcover ISBN 978-3-031-69133-1.
4. **Nitish Gupta**, D. Bhargavi, "Effect of Magnetic Field on Couette Flow in a Fluid-Saturated Porous-Filled Duct Under the Local Thermal Non-equilibrium with Viscous Dissipation", *Advances in Mechanical Engineering and Material Science* (pp. 57-68), Springer, Singapore, 2023.
   Hardcover ISBN 978-981-99-5612-8, eBook ISBN 978-981-99-5613-5.
5. **Nitish Gupta**, D. Bhargavi, "The Influence of Magnetic Effect in a Channel Partially Filled with Porous Material: A Numerical Investigation" *Mathematical Modeling, Computational Intelligence Techniques and Renewable Energy* (pp. 415-426), Springer, Singapore, 2023.
   Hardcover ISBN 978-981-19-9905-5, eBook ISBN 978-981-19-9906-2.

### Articles In Conference Proceeding (2 Published)

1. **Nitish Gupta**, D. Bhargavi, "Influence of local thermal non-equilibrium on forced convection heat transfer in a duct packed with porous medium: iso-thermal walls", *Proceedings of the 27$^{th}$ National and 5$^{th}$ International ISHMT-ASTFE Heat and Mass Transfer Conference*, pp. 137-143 (2024).
2. **Nitish Gupta**, D. Bhargavi, "Impact of magnetic field on heat transfer in a parallel plate channel with a centered porous layer: Darcy-Brinkman model", *AIP Conference Proceedings*, 2768, 020014 (2023). [SCOPUS/WoS]

## Research Presentations/Talks in International Conference/Symposium

1. International Conference on Nonlinear Dynamics and Applications ***(2$^{nd}$ ICNDA 2024)***
   Sikkim Manipal University, India 21$^{st}$-23$^{rd}$ Feb., 2024
2. International Conference on Emerging Frontiers in Nonlinear Complex Systems, Computational Intelligence and their Applications ***(1$^{st}$ ICNCS-2024)***
   VIT Chennai, India 07-09$^{th}$ Feb., 2024
3. Proceedings of the ***27$^{th}$ National and 5$^{th}$ International ISHMT-ASTFE*** (Indian Society for Heat and Mass Transfer - American Society of Thermal and Fluids Engineers) Heat and Mass Transfer Conference
   IIT Patna, India 14-17$^{th}$ Dec., 2023
4. Congress of Indian Society of Theoretical and Applied Mechanics ***(68$^{th}$ ISTAM-2023)***
   NIT Warangal, India 07-09$^{th}$ Dec., 2023
5. International Conference on Advances in Mechanical Engineering and Material Science ***(2$^{nd}$ ICAMEMS-2023)***
   VIT AP, Andhra Pradesh, India 20$^{th}$ -22$^{nd}$ April 2023
6. International Conference on Advancements in Materials, Manufacturing & Automation ***(1$^{st}$ AMMA 2023)***
   Amrita Vishwa Vidyapeetham, Chennai, India 07-08$^{th}$ April, 2023
7. International Conference on Recent Advances in Fluid Mechanics ***(1$^{st}$ ICRAFM 2022)***
   MIT Manipal, Karnataka, India 04-06$^{th}$ Oct., 2022
8. International Conference on Mathematical Modeling, Computational Intelligence Techniques and Renewable Energy ***(3$^{rd}$ MMCITRE-2022)***
   UTS, Australia and PDEU, India 04-06$^{th}$ Mar., 2022
9. Congress of Indian Society of Theoretical and Applied Mechanics ***(66$^{th}$ ISTAM-2022)***
   VIT AP, Andhra Pradesh, India 04-06$^{th}$ Dec., 2022
10. International Interdisciplinary Conference on Mathematics, Engineering and Science ***(1$^{st}$ MESIICON-2022)***
    Dr. B. C. Roy Engineering College, Durgapur, India 11-12$^{th}$ Nov., 2022
11. International Conference on Computational Applied Sciences and it's Applications ***(1$^{st}$ ICCASA-2022)***
    University of Engineering and Management, Jaipur, India 28-29$^{th}$ April, 2022

## Workshops/FDPs Attended

1. Attended ten-day FDP program on *"Current Advancements in Artificial Intelligence, Machine Learning, and Data Science"* held une 16-25, 2025, organized jointly by Department of Mathematics, Jaypee Institute of Information Technology (JIIT), Noida, Uttar Pradesh and Electronics & ICT Academy (Ministry of Electronics & Information Technology, GoI, New Delhi), National Institute of Technology Warangal, India.
2. Participated in workshop on *"International Symposium on Complete Flux Scheme for Convection Diffusion Reaction Models, Fluid Flow and Allied Topics"* held January 18–21, 2024, organized by Indian Institute of Technology (IIT) Kanpur, India.

3. Participated in a workshop on *"Recent Advances in Differential Equations and Applications"* held October 27–31, 2023, organized by VIT-AP University, India.
4. Participated in international workshop on *"Applicable Mathematics for Science and Engineering - Recent Advances (AMSE - 2023)"* held February 16–20, 2023, organized by VIT-AP University, India.
5. Short-term course titled *"Applications of CFD to Engineering Problems with Hands-on Practice"* held October 17–21, 2022, organized by National Institute of Technology (NIT) Rourkela, India.
6. Five-day international workshop on *"Advanced Numerical Techniques for Differental Equations (ANTDE-22)"* held June 06–10, 2022, organized by Malaviya National Institute of Technology Jaipur (MNIT), Jaipur, India.
7. Five-day FDP program on *"Teaching and Learning Strategies of Differential Equations & Applications in Science and Engineering"* from December 28, 2020 – January 1, 2021, organized by Department of Mathematics, National Institute of Technology (NIT) Warangal, Telangana, India.
8. e-Colloquium on *"Recent Advancement in Fluid Flow and Heat Transfer"* from October 19–25, 2020, organized by Department of Mathematics, National Institute of Technology (NIT) Roorkee, India.
9. Attended One Week Workshop (TEQIP-III) on *"ODEs, PDEs, and Integral Equations:Their Engineering Context (OPIE-2020)"* from September 21–26, 2020, organized by Department of Mathematics, National Institute of Technology (NIT) Uttrakhand, India.
10. Five days short-term course titled *"Numerical Solutions of Differential Equations"* from September 16–20, 2020, organized by Department of Mathematics, National Institute of Technology (NIT) Jalandhar, Punjab, India.
11. Attended a five-day national webinar on *"Fluid Dynamics on Mathematicians Viewpoint"* held on August 9–13, 2020, organized by GITAM Deemed to be University, Hyderabad, India.
12. Participated in *"Virtual Math Fest 2020"* held on July 20-26, 2020, organized by Institute of Mathematical Sciences Chennai (IMSC), India.
13. Attended a five-day FDP program on *"LaTeX"* held on May 19–23, 2020, organized by Anand International College of Engineering in association with Spoken Tutorial Project, Indian Institute of Technology (IIT) Bombay, India.

## GIAN Courses Attended

- "Linear and Non-linear Hydrodynamic Stability: Theory and Computation" offered by the Department of Mathematics, NIT Warangal, from April 11–24, 2022

## Professional Activity

### *Departmental Talks:*

- Porous media and its application in science and industry, October $28^{th}$, 2022, Department of Mathematics, NIT Warangal-506004.
- The effect of the magnetic field in a duct partially packed with porous material, July $16^{th}$, 2023, Department of Mathematics, NIT Warangal-506004.

### *Journal(s) Editor:*

- Associate Editor: Fluid Mechanics (Science Publishing Group (SciencePG))
- Editorial Board: Advanced Studies in Mechanical Engineering and Physics (Pushpa Publishing House)

### *Referee for the following peer-reviewed journals:*

- Physics of Fluids, AIP Publishing (SCI/SCIE: Q1)
- European Journal of Mechanics / B Fluids, Elsevier (SCI/SCIE: Q2)
- Numerical Heat Transfer, Part A: Applications, Taylor & Francis (SCI/SCIE: Q2)
- Numerical Heat Transfer, Part B: Fundamentals, Taylor & Francis (SCI/SCIE: Q2)
- Special Topics & Reviews in Porous Media - An International Journal (SCI/SCIE: Q3)
- Materials Today: Proceedings, Elsevier (SCOPUS/WoS)

### *Membership in professional bodies:*

Andhra Pradesh and Telangana Society for Mathematical Sciences (APTSMS) with membership ID: 1310/1986 C.C.No. 988/2018

## References

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