

Resume

KOMAL GOYAL

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Komal Goyal

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Summary

Research scholar with **2.8+** years of experience actively engaged in **Computational Fluid Dynamics** research. Proficient in utilizing **Latex**, **Mathematica**, **MATLAB**, and **Microsoft Excel**, and currently expanding skills in **Ansys Fluent**, **COMSOL** and **Python** programming language. Demonstrated expertise in statistical software such as **R**, **Minitab** with a keen interest in learning additional data analysis tools.

- [WoS](#)
- [ORCID](#)
- [LinkedIn](#)
- [Scopus ID](#)
- [ResearchGate](#)
- [Google Scholar](#)

Research Interest

- Heat & Mass Transfer
- Pulsatile Flow
- Starting Flow
- Immiscible fluid flow
- Nanofluid flow
- Flow through straight channel
- Flow through corrugated curved channel
- Artificial Neural Network (ANN)
- Physics-Informed Neural Network (PINN)

Research Experience

Research Scholar

VIT-AP University • Amravati, Andhra Pradesh
07/2021 - Present

- Research Scholar at VIT-AP University specializing in **Fluid Dynamics**, actively engaged in doctoral research. Successfully completed the **First Doctoral Committee (DC)** meeting on **October 16, 2021**, the **second Doctoral Committee meeting/Comprehensive Viva (CV)** on **September 16, 2022**, **PhD Colloquium** on **February 9, 2024** and the **PhD Synopsis** on **April 13, 2024**.
- Demonstrated strong academic performance by achieving 'S' grades in four coursework exams: **Research Methodology**, **Research Publication Ethics**, **Techniques of Applied Mathematics**, and **Fluid Dynamics**.
- **Published research articles in esteemed journals, including:**
 1. "Case Studies in Thermal Engineering (**SCI-Journal**)"
 2. "Numerical Heat Transfer, Part A: Applications (**SCI-Journal**)"
 3. "International Journal of Modelling and Simulation (**ESCI-Journal**)"

4. “CFD Letters (**Scopus Indexed Journal**)”
5. “Gulf Journal of Mathematics (**Scopus Indexed Journal**)”

List of Publications

The list of publications can be directly accessed by clicking the title of the research papers mentioned below:

1. [Entropy generation analysis for hydromagnetic two-layered pulsatile immiscible flow with Joule heating and first-order chemical reaction](#) is published in “**Case Studies in Thermal Engineering**”, which is an **ELSEVIER** publisher having an Impact Factor **6.8**.
2. [Pulsatile flow of Casson hybrid nanofluid between ternary-hybrid nanofluid and nanofluid in an inclined channel with temperature-dependent viscosity](#) is published in “**Numerical Heat Transfer, Part A: Applications**”, which is a **Taylor and Francis** publisher having an Impact Factor **2.0**.
3. [Two-layered magnetohydrodynamics of immiscible pulsatile flow in corrugated curved channel](#) is published in “**International Journal of Modelling and Simulation**”, which is a **Taylor and Francis** publisher having an Impact Factor **3.1**.
4. [A Note on Two-Fluid Starting Flow in a Porous Spaced Channel with a Magnetic Field](#) is published in “**CFD Letters**”, which is a **Semarak Ilmu** publisher.
5. [Pulsatile flow of immiscible ternary hybrid nanofluid in a corrugated curved channel](#) accepted for publication in “**Numerical Heat Transfer, Part A: Applications**”, which is a **Taylor and Francis** publisher having an Impact Factor **2.0** on **(20-05-2024)** and will be published online soon.

Conference Papers

1. [Effects of different nanoparticles on the flow of two immiscible liquids in an inclined channel with Joule heating and viscous dissipation](#) is published in “**Gulf Journal of Mathematics**”.

Research work under progress

1. Working on research paper entitled “Effect of non-linear thermal radiation on Immiscible fluid flow in rotating channel: A PINN study” and will be communicated soon.
2. Working on a research paper entitled “Transport phenomena of non-miscible liquid flow in semi-corrugated channel using Physics-Informed Neural Network” and will be communicated soon.
3. Working on research paper entitled “Immiscible fluid flow through vertical rectangular duct” and will be communicated soon.
4. Working on research paper entitled “Application of Adaptive Neuro-Fuzzy Inference system on immiscible fluid flow through channel” and will be communicated soon.
5. Working on research paper entitled “Impact of Cattaneo-Christov heat flux on non-miscible time-dependent flow” and will be communicated soon.
6. Working on research paper entitled “Regression analysis of bio-convective non-miscible fluid flow” and will be communicated soon.
7. Working on a research paper entitled “Jeffery fluid flow in a corrugated curved channel” which will be communicated soon.
8. Working on a research paper entitled “Unsteady solute dispersion in a pulsatile flow of micropolar-Newtonian fluids through a porous layered channel under the influence of inclined magnetic field”.

Reviewer Experience

Reviewed multiple research papers and provided feedback on manuscripts submitted to the journal:

- "Numerical Heat Transfer, Part A: Applications".
- "Journal of Advanced Research in Fluid Mechanics and Thermal Sciences".
- "CFD Letters".
- "Thermal Science and Engineering".

Papers presented in conferences & poster presentations

- Presented a poster on "**Entropy generation analysis of pulsatile two-layered immiscible liquid flow with joule heating and first-order chemical reaction**" in **V-Samsodh 2023** at VIT-AP University, 30-Nov-2023 to 2-Dec- 2023.
- Presented a paper on "**Time-dependent flow of Casson Hybrid nanofluid between ternary hybrid nanofluid and nanofluid in an inclined channel with temperature-dependent viscosity**" in *International Conference on Computational Modelling in Science and Engineering (ICCMSE-2023)* at NIT-Warangal, 28-Oct-2023 to 30-Oct- 2023.
- Presented a paper on "**Pulsatile Flow of Casson Hybrid Nanofluid Between Ternary Hybrid Nanofluid and Hybrid Nanofluid in an Inclined Channel with Temperature-Dependent Viscosity**" in *International Conference on Modelling, Simulation, and Optimization of Energy Systems (MSOES 2023)* at Canadian University Dubai in conjunction with United Arab Emirates University (AI Ain, UAE) & Dr B.R. Ambedkar NIT-Jalandhar, Punjab, India, 17-June- 2023 to 18-June-2023.
- Presented a poster on "**Starting Flow in a channel with two immiscible fluids**", **V-Samsodh 2022** at VIT-AP University, 30-Nov-2022 to 2-Dec-2022.
- Presented a paper on "**Starting Flow in a channel with two immiscible fluids**", *International Conference on Advances in Transport Phenomenon (ICATP'22)*, at VIT-AP University, Amaravati, 17-July-2022 to 18-July-2022.
- Presented paper titled "**Hydromagnetic two-layered immiscible fluid flow with Heat Source and Magnetic Field**" at **ICRDM-22**.

Attended conferences, FDPs, seminars & workshops

- Attended "**6-Day Workshop (Karyashala) on Mathematical foundation of machine learning and its applications to emerging areas of AI**" held by the Department of Computer Science, IIT-Indore, India, on May 27-June 1, 2024.
- Attended "**Guest lecture on Holistic evaluation of the Archean: Unravelling key insights into your young earth**" held by the Department of Mathematics, School of Advanced Sciences, VIT-AP University, Andhra Pradesh, India, on April 27, 2024.
- Attended "**Long-time behaviour in Lotka-Volterra and nonlocal gradient systems**" held by the Department of Mathematics, School of Advanced Sciences, VIT-AP University, Andhra Pradesh, India, on April 27, 2024.
- Attended "**International Symposium on Advances in Mathematical Sciences (ISAMS 2024)**" held by Candian University Dubai, UAE, in conjunction with Dr B. R. Ambedkar National Institute of Technology, Jalandhar, India, on March 23-24, 2024.

- Attended "*5-Day Faculty Development Program on Mathematics in Engineering and Science- Importance and Applications* (MES 2024)" held by the Department of Mathematics, School of Advanced Sciences, VIT-AP University, Andhra Pradesh, India, on January 02-06, 2024.
- Attended "*Online Short-Term Course on Mathematics with Computational Learning for Engineering and Technological Applications* (MCET 2023)" held by the Department of Mathematics, Dr. B. R. Ambedkar National Institute of Technology, Jalandhar, Punjab, India, on November 20-24, 2023.
- Attended "*5-day International Workshop on Recent Advances in Differential Equations and Applications* (IWRADDA 2023)" held by the Department of Mathematics at the School of Advanced Sciences, VIT-AP University, India, on October 27-31, 2023.
- Attended "*International Workshop on Fluid Dynamics* (IWFD 2023)" held by the Faculty of Science at the Center for Data Analytics Consultancy and Services (UM-CDACS), Universiti Malaya (UM) in Malaysia, on August 8-10, 2023.
- Attended "*5-Day National Level Lecture series on Energy Conversion and Storage*" held by the Department of Physics, School of Advanced Sciences(SAS) at VIT-AP University, Amaravati, Andhra Pradesh, India, on July 24-28, 2023.
- Attended "*5-Day Faculty Development Program (FDP) on Numerical and Simulation Tools for Research in Mechanical Engineering*" held by the School of Mechanical Engineering (SMEC), VIT-AP University, Amaravati (AP), India, on June 24-30, 2023.
- Attended "*5-Day Faculty Development Program (FDP) on Numerical and Simulation Tools for Research in Mechanical Engineering*" organised by the School of Mechanical Engineering (SMEC), VIT-AP University, Amaravati (AP), India from 20th to 24th June 2023.
- Attended "*8th International Conference on Mathematics and Computing* (ICMC 2022)".
- Attended an Online Workshop on "*Advances in Applied Mathematics and Computational Methods*".
- Attended "*National Webinar on Research Trends in Mathematics-2021*".
- Attended an invited talk on "*Wind wave interaction: Extensions to finite depth*".
- Attended invited talk on "*National Webinar Series on Foundation of Data Science*".
- Attended FDP on "*Recent Trends in Mathematical and Statistical Techniques*".
- Attended "*Two Days International Conference on Mathematics, Statistics and Applications-2022* (ICMSA-22)".
- Attended workshop on "*Proposal Writing for Funding Agencies*".
- Attended "*5-Day International Workshop on Applicable Mathematics for Science and Engineering-Recent Advances* (ASME-2023)".
- Attended "*3-Day Workshop on Introduction to R through Statistics*".

Education

Masters of Science(Mathematics)

University of Delhi, New Delhi

07/2021

As an aggregate topper at **Deshbandhu College** from batch **July 2019 – July 2021**, I achieved outstanding academic performance with an impressive CGPA of **8.429**.

Bachelor of Science(Mathematics)

University of Delhi, New Delhi

07/2019

As an aggregate topper at **Deshbandhu College** from batch **July 2016 – July 2019**, I achieved outstanding academic performance with an impressive CGPA of **8.676**.

CBSE 12th Grade

Manav Rachna International School, Charmwood, Haryana

07/2016

Secured **86.6%**.

Honours and Awards

- **Certificate of appreciation** for research with money reward worth **Rs. 10000** on University day-2024.
- Four times "**Raman Research Awardee**" worth **Rs. 51,000**(in total).
- Selected in "**International Research Awards on Advanced Nanomaterials and Nanotechnology**" under the category of "**Best Researcher Award**".
- Invited as a Speaker at the **3rd Global Summit and Expo on Aerospace and Mechanical Engineering (GSEAME2023)**, which will be held in **Rome, Italy**, on **November 16-18, 2023**.
- Received a certificate **securing CGPA 8.429**(aggregate of I, II years) in MSc Mathematics, Deshbandhu college, University of Delhi (Batch 2019-2021).
- Received a certificate **securing CGPA 8.676**(aggregate of I, II, III years) in BSc. (Hons) Mathematics, Deshbandhu College, University of Delhi (Batch 2016-2019).
- Secured Grade "A" in Advanced Diploma in Computer Application.

Teaching Experience

VIT-AP University, Amravati, Andhra Pradesh, India

07/2021 - Present

- As a teaching assistant for first-year B-Tech students, I effectively utilised MATLAB as an instructional tool for the course "**Calculus for Engineers**".
- I used to teach MATLAB's numerical computation capabilities to demonstrate fundamental aspects of calculus, including differentiation, integration, and the solution of differential equations, in my lectures. By utilising built-in functions such as "diff," "int," and "ode45," I effectively illustrated these concepts in a practical manner.
- Established positive relationships with students, parents, fellow teachers and school administrators.

Teaching Interest

- Real Analysis
- Complex Analysis
- Ordinary Differential Equations(ODEs)
- Partial Differential Equations(PDEs)
- Numerical Methods

Extra-Curricular Activities

- Participate in International QuizHunt for the "Smartan Brigade" Season-2 in 2015.

- Secured 1st Position in U-19 Volleyball in 5th Inter Sports Championship. Participate in International Quiz Hunt for the "Smartan Brigade" Season-2 in 2015.
- Secured 1st Position in KABADDI in the Annual Sports Festival in 2016-2017 of DESHBANDHU COLLEGE, University of Delhi.
- Secured 2nd Position in TUG OF WAR in the Annual Sports Festival in 2016-2017 of DESHBANDHU COLLEGE, University of Delhi.
- Secured 1st Position in KABADDI in the Annual Sports Festival in 2017-2018 of DESHBANDHU COLLEGE, University of Delhi.

Skills

- Python
- MATLAB
- MATHEMATICA
- LaTeX
- Minitab
- COMSOL
- R Software
- Microsoft PowerPoint

Languages

- English
- Hindi

Referees Name

- Prof. Suripeddi Srinivas
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Benito Juarez Road, 110021,
New Delhi, India.
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- Dr. Punnet Rana
Assistant Professor,
College of Science, Mathematics and Technology,
Wenzhou-Kean University (Sino-American University),
China.

Email Address: prana@kean.edu

Personal Details

- Father's Name: Mr. Sanjay Goyal
- Mother's Name: Mrs. Kavita Goyal
- Date of Birth: March 19, 1999
- Nationality: Indian
- Sex: Female
- Marital Status: Unmarried
- Permanent Address: Badarpur, New Delhi