

1. Personal Information

- **Name:** Dr. Alok Mishra
- **Position:** Assistant Professor.
- **Department:** Mechanical Engineering.
- **Contact Information:** aamishra@sggs.ac.in,

Automobile Lab, Department of Mechanical Engineering

2. Educational Background

- **Degrees:** PhD (Aerospace Engineering), IIT Kanpur, 2021
M. Tech (Energy Systems), IIT Roorkee, 2012
B. Tech (Mechanical Engineering), UIET Kanpur, 2009
- **Postdoctoral Experience:** IIT Kharagpur (2022-2023), IIT Delhi (2023-2024)
- **Certifications:** NA

3. Research Interests

- **Areas of Expertise:** AI/Machine learning in fluid mechanics and engineering, Computational Fluid Dynamics (CFD), High Performance Computing (HPC), Wind Turbine, Turbulence modeling, Flow instability analysis, Product Life-cycle Management (PLM)
- **Ongoing Projects:**
 - Application of Physics Informed Neural Network on heat transfer.
 - Investigation of power generation through oscillating airfoils
 - Improving Product Quality by using 12-Step QC Process
 - Automated Intelligent Nesting System for Efficient Metal Waste Reduction in Laser Cutting
- **Interdisciplinary Work:** NA.

4. Teaching Experience

- **Courses Taught:**
 - Computational Fluid Dynamics
 - Machine Learning

- Heat Transfer
- Object Oriented Programming
- I.C. Engine and Electric Vehicle, Operation Research
- **Course Development:** Advanced Computational Fluid Dynamics, Advanced Fluid Dynamics and Turbo-machines

5. Publications and Presentations (<https://scholar.google.com/citations?user=L7A0bKsAAAAJ&hl=en>)

- **Books:** NA.
- **Journal Articles:**
 - Alok Mishra, Nitish Arya and Amitabh Bhattachaya, "Wake steering of wind turbine in the presence of a two-dimensional hill", Physics of Fluids 36, no. 4 (2024): 045125.
 - Alok Mishra and Ashoke De, "Investigation of flow over NACA0021 airfoil with leading edge tubercles using transition-based hybrid RANS/LES model", journal of flow visualization and image processing 30, 1(2023): 1-36
 - Mayank Verma Alok Mishra and Ashoke De, "Flow Characteristics of Elastically Mounted split cylinder at sub-critical Reynolds Number", Physics of Fluids 33, no. 12 (2021): 123612.
 - Alok Mishra and Ashoke De, "Suppression of vortex shedding using a slit through the circular cylinder at low Reynolds number", European Journal of Mechanics / B Fluids, 89 (2021): 349-366.
 - Alok Mishra, Mohd Hanzla and Ashoke De, "Passive control of the onset of vortex shedding in flow past a circular cylinder using slit", Physics of Fluids 32.1 (2020): 013602.
 - Alok Mishra, Gaurav Kumar and Ashoke De, "Prediction of separation induced transition on thick airfoil using non-linear URANS based turbulence model", Journal of Mechanical Science and Technology 33(5), (2019): 2169-2180.
 - Alok Mishra, M. Jithin, Ashoke De and Malay K. Das, "Effect of Passive Flow Control of Bifurcation Phenomenon in Sudden Expansion Channel", Proceedings of the National Academy of Sciences, India Section A: Physical Sciences 89, no. 4 (2019): 663-672.
 - M. Jithin, Alok Mishra, Ashoke De and Malay K. Das, "Numerical study of bifurcating flow through sudden expansions: effect of divergence and geometric asymmetry", International Journal of Advances in Engineering Sciences and Applied Mathematics, 8, no. 4 (2016): 259-273.

- **Conference Papers:**

- Aditya G. Kahalkar , Alok Mishra, Jeet P Patil, Kalpak R Sagar, "Experimental Investigations on Flat Heat Pipe-Based Battery Thermal Management using Prismatic Dummy Cells" International Conference on Frontiers in Energy, Environment, and Material Sciences for Sustainable Development (FEEMSSD-2025), MMMUT Gorakhpur, India.
- Alok Mishra , Nitish Arya and Amitabh Bhattachaya, "Effect of Topography on Wake Steering In Wind Farms" submitted to Proceedings of 18th European Turbulence Conference, September 04-06, 2023, Valencia, Spain.
- Nandan Sarkar, Alok Mishra and Somnath Roy, "On the three-dimensional aspects of flow through sudden expansion" submitted to Proceedings of the 27th National and 5th International ISHMT - ASTFE Heat and Mass Transfer Conference December 14-17, 2023, IIT Patna, Patna-801106, Bihar, India.
- Nandan Sarkar, Debajyoti Kumar, Apurva Raj, Alok Mishra, Bharatkumar Sharma, Somnath Roy, "A multi-GPU scalable Immersed Boundary Method for complex flow problems" 9th International and 49th National Conference on Fluid Mechanics and Fluid Power (FMFP) December 14-16, 2022, IIT Roorkee, Roorkee-247667, Uttarakhand, India
- Alok Mishra Mohd Hanzla and Ashoke De, "Onset of Laminar Vortex Shedding for a Flow Past 2d Slit Cylinder" Proceedings of the 7th International and 45th National Conference on Fluid Mechanics and Fluid Power (FMFP-2018), Paper No. 221, IIT Bombay, India.
- Alok Mishra Mohd Hanzla and Ashoke De, "Passive Flow Control over a 2D Cylinder Using Slit" First International Conference on Mechanical Engineering 2018, Jadavpur University Kolkata. 04-06 Jan 2018
- Alok Mishra, Saravana Kumar Lakshmanan and Ashoke De, "Aerodynamic Performance of Airfoil with Leading Edge Tubercles" Proceedings of 6th International and 43rd National Conference on Fluid Mechanics and Fluid Power (FMFP-2016), Paper No. 57, Allahabad, India.
- Alok Mishra , Ashoke De and Digbijoy Mukherjee, "Passive Control of Bifurcation Phenomenon in Sudden Expansion Flow" AIP Conference Proceedings (ICNAAM-2016), 1863, 030008 (2017), Rhodes, Greece.
- Alok Mishra, Saravana Kumar Lakshmanan and Ashoke De, "Effect of Leading-Edge Tubercle on Aerodynamic Performance of NACA 0021 Airfoil", Proceedings of the International Conference

on Modern Research in Aerospace Engineering, Lecture Notes in Mechanical Engineering. Springer, Singapore (2018).

- Saravana Kumar Lakshmanan, Alok Mishra and Ashoke De, "Assessment of different turbulence models for predicting laminar separation bubble over thick airfoils" Proceedings of ASME 2015 Gas Turbine India Conference, GTIndia2015-1277, Bangalore, India.
- Saravana Kumar Lakshmanan, Alok Mishra and Ashoke De, "Numerical Prediction of Transitional Flow over Thick Airfoils" National Propulsion Conference NPC2015, IIT Bombay, 23-24 Feb 2015

- **Editorial Work:** Reviewer of Physics of Fluids.

6. Awards and Honors

- **Grants:** NA.
- **Awards:** NA.
- **Fellowships:** MHRD fellowship.

7. Professional Experience

- **Administrative Roles:**
 - Institute Vehicle In-charge
 - Boys Hostel Warden .
 - Lab In-charge:: Automobile and HT Lab
- **Industry Collaboration:** NA
- **Consulting Work:** NA

8. Supervision and Mentoring

- **PhD/Master's Supervision:** 3

9. Professional Memberships

- **Associations:** NA.

10. Miscellaneous

- **Languages:** English and Hindi.
- **Skills:** C/C++, Python, MATLAB, FORTRAN, ANSYS-Fluent, ICEM-CFD, Gmsh, OpenFOAM CFD toolbox, Tecplot, Paraview, CATIA-V5, Solidworks, Pro-E, AutoCAD, MS office.

- **Personal Interests:** Lawn tennis, table tennis, snooker, swimming, reading, and travelling