

Name of Faculty Dr. Ranjit J. Singh  
 Designation Assistant Professor  
 Nature of Job/Appointment Regular



Date of Joining 15-03-2022

E-mail ranjitsingh\_mech@cbit.ac.in

Education Qualifications	Name of the Degree	Class
Post-Doctoral Fellow	University of California Los Angeles, USA	Satisfactory
Post-Doctoral Fellow	IIT Kanpur	Satisfactory
Post-Doctoral Fellow	IIT Bombay	Satisfactory
PhD	Mechanical Engineering (Thermal Engineering), Visvesvaraya National Institute of Technology Nagpur	Ist Class
PG	M. Tech (Heat Power Engineering), Visvesvaraya National Institute of Technology Nagpur	Ist Class
UG	B. Tech (Mechanical Engineering), Nagpur University	Ist Class

Work Experience		
Teaching	2 Years 11 Months	
Research	2 Years 7 Months	
Industry	---	
Others	GATE six times qualified.	
Area of Specialization	Fluid dynamics, Heat Transfer, Thermodynamics, Multiphase flow, CFD, Magnetohydrodynamics flow,	
Professional Memberships	-	
Responsibilities held at Institution Level	--	
Responsibilities held at Department Level	--	
Research Guidance	--	

Awards Received	<ol style="list-style-type: none"> <li>Received Post-Doctoral fellowship from US Department of Energy (USA) from January 2021 – January 2022.</li> <li>Received Institute fellowship from IIT Bombay for Post-Doctoral Research from February 2019 - March 2020</li> <li>Received the MHRD (Government of India) fellowship for four years July 2015 - February 2019 during Ph.D.</li> <li>Received the MHRD (Government of India) scholarship for two years July 2011 – June 2013 during M. Tech</li> <li>Received 2<sup>nd</sup> prize in the Research Scholar Day a TEQIP-III sponsored program organized by VNIT Nagpur held on February 8 – 9, 2019.</li> </ol>
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Courses Handled at Under Graduate / Post Graduate Level. Heat Transfer, Power Plant Engineering, Fluid Mechanics

No. of Papers Published National Journals – 00 International Journals – 09  
 National Conference – 01 International Conference – 15

Projects Carried out --

Patents --  
 Technology Transfer --

Invited Speaker

1. Invited as a Resource person on Research Methodology for one-week International Faculty Development Program on "Research Directions in Science and Technology 2021" at Dr. D. Y. Patil Institute of Technology, Pimpri, Pune.
2. Delivered Guest Lecture in Physics (Gravitation) at M N Virani Science College, Rajkot (G.J) under the scheme of Gujarat State Biotechnology Mission in March 2015.

3. Delivered Guest Lecture in Physics (Fluid Mechanics) at M N Virani Science College, Rajkot (G.J) under the scheme of Gujarat State Biotechnology Mission in April 2015.
4. Delivered Guest Lecture in Physics (Electromagnetic Force) at M N Virani Science College, Rajkot (G.J) under the scheme of Gujarat State Biotechnology Mission in March 2014.

No. of Books/Chapter Published with details

1. **Ranjit J. Singh**, Trushar B. Gohil, "The CFD analysis of convection heat transfer with magnetic field in the 2D domain using OpenFOAM", Advances in Mechanical Engineering. Lecture Notes in Mechanical Engineering. 473-479 (2021) Springer, Singapore.

2. **Ranjit J. Singh**, Trushar B. Gohil, "Mixed Convection Heat Transfer in a Cavity with Rotating Cylinder Under the Influence of Magnetic Field", Advances in Fluid and Thermal Engineering, Lecture Notes in Mechanical Engineering, pp 53-62 (2019) Springer, Singapore.

1. Participated in two-week online FDP on Smart material Processing and Applications organized by NITTTR Chandigarh during July 25 – 29, 2022.

2. Participated in one-week online FDP on Recent trends in Robotics Jointly organized by IIT Roorkee, NIT Patna during July 04 – 15, 2022

3. Participated in one week training program on CFD with OpenFOAM held at VNIT Nagpur in July 23 – 28, 2020.

4. Participated in one week training program on CFD with OpenFOAM held at VNIT Nagpur in Dec 14 – 19, 2018.

5. Participated in five weeks training program on CFD with OpenFOAM held at VNIT Nagpur in May 18 – June 22, 2018.

6. Participated in five weeks training program on Computational Fluid Dynamics Using ANSYS (ICEM & FLUENT) held at VNIT Nagpur in May 26 – June 30, 2017.

7. Participated in one-week STTP on CFD with OpenFOAM held at VNIT Nagpur in Dec 8 – 12, 2016.

8. Participated in two days STTP on TEQIP –II Sponsored CFD Applications held at VNIT Nagpur in Oct 21 - 22,

Details of Short-Term Training Programs/Faculty Development Programs/Seminars/Workshops, Other Trainings (Attended and/or Organized).



- 2016.
9. Participated in one-week STTP on Process Modelling & Simulation Using MATAB held at VNIT Nagpur in July 15 - 19, 2016.
  10. Participated in Six weeks training program on Computational Fluid Dynamics Using ANSYS (ICEM & FLUENT) held at VNIT Nagpur in May 26 – July 9, 2016.
  11. Participated in one-week STTP on Computational Modelling with COMSOL Multiphysics held at VNIT Nagpur in May 21 – 25, 2016.
  12. Participated in one-week STTP on CFD with OpenFOAM held at VNIT Nagpur in Dec 14 – 20, 2015.
  13. Worked as Teaching Assistant in “2-week ISTE WORKSHOP on Thermodynamics organized by IIT-Bombay at VNIT – Nagpur in Dec 2012.
  14. Attended Six weeks CFD training course at CCTECH-PUNE December 2012.

Details of Journal Publications/ Conferences (**National and International**)

**International Journal**

- 1) **Ranjit J. Singh**, Abhilash J. Chandy, “Numerical investigations of the development and suppression of the natural convection flow and heat transfer in the presence of electromagnetic force” *International Journal of Heat and Mass Transfer*, **157 (2020) 119823**. (Elsevier)
- 2) **Ranjit J. Singh**, Trushar B. Gohil, “The numerical analysis on the development of Lorentz force and its directional effect on the suppression of buoyancy-driven flow and heat transfer using OpenFOAM” *Computers and Fluids*, **179 (2019) 476-489**. (Elsevier)
- 3) **Ranjit J. Singh**, Trushar B. Gohil, “Numerical study of MHD mixed convection flow over a diamond-shaped obstacle using OpenFOAM”, *International Journal of Thermal Sciences*, **146 (2019) 106096**. (Elsevier)
- 4) **Ranjit J. Singh**, Trushar B. Gohil, “The numerical analysis on the variation of electric potential, electric current and Lorentz force with its influence on buoyancy-driven conjugate heat transfer and fluid flow using OpenFOAM” *Fusion Engineering and Design*, **148 (2019) 111300**. (Elsevier)
- 5) **Ranjit J. Singh**, Ashwin Raut, Anant Murmu, Mohammed Jameel, “Influence of Glass Powder Incorporated Foamed Geopolymer Blocks on Thermal and Energy Performance of Building Envelope” *Journal of Building Engineering*, **43, (2021) 102520**. (Elsevier)
- 6) **Ranjit J. Singh**, Trushar B. Gohil, “The numerical analysis of unsteady natural convection flow and heat transfer in the existence of Lorentz force in suddenly expanded cavity”, *Journal of Thermal Science*: **29 (6) (2020) 1513-1530**. (Springer)
- 7) Ashwin Raut, **Ranjit Singh**, Anant Murmu, Khan Asudullah Khan, “Evaluation of Thermal and Energy Consumption Behavior of Novel Foamed Copper Slag based Geopolymer Masonry Blocks, *Ceramics International*, (Accepted). (Elsevier)
- 8) **Ranjit J. Singh**, Trushar B. Gohil, “Influence of the presence of the Lorentz force and its direction on the suppression of secondary flow in two different orifices: A numerical study using OpenFOAM” *Journal of Applied Fluid Mechanics*, **12 (3) (2019) 751-762**.
- 9) S. Smolentsev, C.E. Kessel, J.D. Lore, R. Maingi, **R. Singh**, D.L. Youchison, Numerical analysis of liquid metal MHD flow and heat transfer for open-surface Li divertor in FNSF, *IEEE Transaction on Plasma Science*. (Accepted).

- 10) Ashwin Raut, **Ranjit J. Singh**, Christy P. Gomez, Mohammed Jameel, "Investigation of Thermal Efficiency & Key Sustainability Features of Bricks Developed from Oil Palm & Glass Waste, *Journal of Materials in Civil Engineering*, (Accepted). (American Society of Civil Engineers).

### International Conference Proceedings

- 1) **Ranjit J. Singh**, Y. S. Kannan, Ravi Degala, "The numerical analysis of the sloshing tank with baffles at the high amplitude of vertical oscillation using OpenFOAM", *Materials Today: Proceedings*, 62 (6) (2022) 4094-4097.
- 2) **Ranjit J. Singh**, Trushar B. Gohil, "Numerical Analysis on the Flow Bifurcation and Heat Transfer Regulation in the Constricted Cavity under the Transverse Magnetic Field using OpenFOAM" *Proceedings of the ASME 2021 Fluids Engineering Division Summer Meeting. Volume 1: Aerospace Engineering Division Joint Track; Computational Fluid Dynamics*. Virtual, Online. August 10–12, 2021. V001T02A046. ASME. <https://doi.org/10.1115/FEDSM2021-61944>,
- 3) **Ranjit J. Singh**, Trushar B. Gohil, "The numerical analysis on the buoyancy-driven conjugate heat transfer and fluid flow under the influence of magnetic field in the cubic cavity using OpenFOAM", *J. Phys.: Conf. Ser.* 1240 012081 (2019).
- 4) **Ranjit J. Singh**, Trushar B. Gohil, "The MHD based numerical analysis of Rayleigh-Bénard convection flow of liquid metal in the smoothly constricted enclosure from the top using OpenFOAM", *J. Phys.: Conf. Ser.* 1276 012049 (2019).
- 5) **Ranjit J. Singh**, Trushar B. Gohil, "Effect of MHD on Rayleigh-Benard Convection", *Indian Society for Heat and Mass Transfer Digital Library, 1897-1902* (2018).
- 6) **Ranjit J. Singh**, Trushar B. Gohil, "Numerical Analysis on the Flow of Molten Steel in the Casting Cavity in the Presence of Magnetic Field", *Materials Today: Proceedings*, 44 (2021) 356-361.
- 7) **Ranjit J. Singh**, Ashwin Narendra Raut, "Investigation of Newly Developed Copper Slag Incorporated Foamed Geopolymer and its Conjugate Heat Transfer Analysis" *Materials Today: Proceedings*, 44 (2021) 518-522.

### International Conference

- 1) **Ranjit J. Singh**, Trushar B. Gohil, "Numerical Investigation on the Liquid Metal Flow and Heat Transfer in the Multi-Step Enclosure in the Existence of Magnetic Field" 2nd International Conference on Recent Advances in Thermal Sciences 2020, at **BITS Pilani, Dubai**, March 19 -21, 2021.
- 2) **Ranjit J. Singh**, Trushar B. Gohil, "The numerical analysis on the distribution of Lorentz force and its influence on buoyancy-driven conjugate heat transfer and fluid flow using OpenFOAM" 25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference, at **IIT Roorkee**, Dec 28 -31, 2019.
- 3) **Ranjit J. Singh**, Trushar B. Gohil, "The Numerical Analysis of the Effect of Lorentz Force on the Unsteady Flow and Heat Transfer in a Square Cavity with Heated Cylinder Using OpenFOAM", 7th International and 45th National Fluid Mechanics and Fluid Power Conference, at **IIT Bombay**, Dec 10-12, 2018.
- 4) **Ranjit J. Singh**, Trushar B. Gohil, "The MHD based numerical analysis of unsteady natural convection flow and heat transfer in a square cavity with rotating heated cylinder using OpenFOAM", International Conference on Mathematical Modelling and Scientific Computing, held at **IIT-Indore**, July 19 – 21, 2018.
- 5) **Ranjit J. Singh**, Trushar B. Gohil, "Numerical Analysis of Fluid Flow and Heat Transfer through Multistep Channel under the Influence of Magnetic Field", 5th International Conference on

Computational Methods for Thermal Problems, held at **IISc Bangalore**, July 9 – 11, 2018.

- 6) **Ranjit J. Singh**, Trushar B. Gohil, "Effect of External Magnetic Field on Natural Convection in a Cube: A Numerical Study", 6th Asian Symposium on Computational Heat transfer and Fluid Flow, Held at **IIT Madras**, Dec 10 – 13, 2017.
- 7) **Ranjit J. Singh**, V. R. Kalamkar, "Experimental and Numerical Analysis of Jet Impingement Heating on Cylindrical Body", International Conferences on Advances in Mechanical Engineering, held at **College of Engineering, Pune**, May 29 – 31, 2013.

### **National Conference**

- 1) **Ranjit J. Singh**, Trushar B. Gohil, "Development of OpenFOAM based solver for Magneto-hydrodynamics flow", XII (IPRoMM) Industrial Problems on Machines and Mechanism Conference, held at **Visvesvaraya National Institute of Technology, Nagpur**, Dec 22 -23, 2016.

