

Raju Bhatia

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EDUCATION

University of Florida

Spring 2021 – Present

Doctor of Philosophy (Ph.D.) in Mechanical Engineering from the Department of Mechanical and Aerospace Engineering.

Herbert Wertheim College of Engineering

Gainesville, FL

- Relevant Coursework: Conduction and Convection Heat Transfer, Gas Dynamics, Data Measurement and Analysis, Classical and Statistical Thermodynamics, Principal of Engineering Analysis.

GPA: 4.0

National Institute of Technology, Rourkela, Odisha, India.

July 2017 – June 2019

Master of Technology (M.Tech.) in Mechanical Engineering from the Department of Mechanical Engineering.

- Relevant Coursework: Computational Fluid Dynamics (CFD), Finite Element Method (FEA), Finite Volume Method (FVM), Advanced Fluid Mechanics, Conduction and Radiation Heat Transfer, Computational Methods in Thermal Engineering, Cryogenics and Vacuum Technology.

CGPA: 8.64/10

TECHNICAL SKILLS

Software: Ansys Fluent, Ansys Structure, COMSOL Multiphysics (Chemistry, Heat Transfer, Porous Media Flow), Solidworks (2D & 3D modelling), Auto CAD, Tecplot, Origin, MS Office Tools (Excel, Word, Power Point), Mac OS, Windows OS, Linux OS, Pandora OS.

Programming Language: C, MATLAB, Python, High Performance Computing.

CERTIFICATES AND TRAININGS

CADD Centre Training Services, India.

December 2015 – January 2016

- In depth learning of Auto CADD for Engineering and Industrial applications.

Eureka Electro Soft Solutions Pvt. Ltd, India

June 2015 – August 2015

- During this interdisciplinary internship, I gained hands-on experience in designing, integrating, and troubleshooting complex embedded systems, enhancing my practical skills in the field of mechatronics. Additionally, made a line following robot, a robotic arm and task specific robots.

National Hydroelectric Power Corporation, India.

July 2014– August 2014

- In depth understanding of Hydropower generations, energy productions, teamwork and communication, project management, data analysis and evaluation, plant operations and maintenance.

LANGUAGES

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|-------------|-----------|------------|
| 1. English. | 2. Hindi. | 3. Nepali. |
| 4. Punjabi. | 5. Pahari | |

RESEARCH EXPERIENCE

University of Florida, Graduate Research Assistant (Ph.D. student).

Spring 2021 – Present

- Pursuing the development of a self-constructed experimental setup, titled 'Double Effect Absorption System for Dehumidification Applications,' as a focal point of my Ph.D. research.
- Performing an array of Computational Fluid Dynamics (CFD) analyses on the constituent elements within my experimental apparatus, encompassing structural integrity, heat transfer dynamics, and fluid mechanics optimizations.
- Engaged in Computational Fluid Dynamics (CFD) analysis to enhance the geometry of reentry vehicles during their entry into Earth's atmosphere at hypersonic velocities.

National Institute of Technology Rourkela, Master Student.

December 2017 – May 2019

- Worked on projects related to GM Type Pulse Tube Cryocoolers, Heat Transfer Enhancement and Two-phase flow by utilizing Ansys Fluent.
- Learned about various turbulence and multiphase models, meshing, modelling of porous media, incorporating user-defined functions (UDFs), etc.

RELEVANT PROJECT EXPERIENCE

Numerical Simulation of Three Fluid Heat Exchangers with Membrane assisted absorption.

July 2023-Present

Currently, there is an ongoing endeavor to optimize a three-fluid heat exchanger for improved performance in terms of pressure drop, heat transfer efficiency, and structural integrity. Ansys Fluent tools such as Species transport, flow through porous media, UDFs are extensively explored to properly simulate and address the fluid mechanics and heat & mass transfer perspective of the problem. Additionally, Ansys Structure is used to optimize the domain physically.

Numerical Simulation of GM-Type Pulse Tube Cryocooler.

August 2018 – February 2019

An attempt has been undertaken, utilizing Ansys Fluent, to simulate a cryocooler designed for cooling High Temperature Superconductors to a temperature of 52 K. Additionally, a User-Defined Function (UDF) was created to enhance the simulation's efficiency.

Numerical Simulation of Heat Transfer and Fluid Flow Characteristics of a Triangular Corrugated Channel.

January 2018 – March 2019

To conduct a numerical analysis comparing the heat transfer and fluid flow characteristics between a triangular corrugated wavy channel and a conventional straight channel. Features like geometry modeler, meshing, post processing were profoundly used.

Numerical Simulation of Chill down process in Transportation Lines.

August 2018 – May 2019

To numerically investigate the transient nature of cryogenic chill down process of Nitrogen as working fluid through pipelines to understand the phase interaction between liquid and gaseous Nitrogen. Two phase flow domains of Ansys fluent were utilized to simulate the problem.