## Mohite Manish Laxman

**Assistant Professor | Ph.D. Researcher – Thermofluid AI Systems |**
**10+ Years Professional Experience**

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## Curriculum Vitae Summary

This academic CV outlines my qualifications, research capabilities, and technical expertise in alignment with my academic vision and long-term research aspirations. It reflects a journey of continuous learning, scientific rigor, and practical application across teaching, research, and real-world engineering challenges.

## Professional Objective

To secure a dynamic academic position where I can contribute to cutting-edge research, mentor future engineers, and establish a sustainable research ecosystem in the field of computational modeling, AI-integrated thermal systems, and clean energy technologies.

## Research Summary

Currently pursuing a Ph.D. in Mechanical Engineering with specialization in hybrid AI-Physics modeling for thermofluid systems. My work focuses on developing deep learning-based predictive models for diesel engines using waste cooking oil blended with nano-additives, backed by experimental validation. My approach bridges the gap between theoretical models and industrial relevance.

## Academic Qualifications

- **Ph.D. in Mechanical Engineering** (Pursuing)
  Savitribai Phule Pune University (M.C.O.E.R.I. Nashik) | Expected 2025
  Thesis: Performance Analysis of Waste Cooking Oil with Nano Additives in Diesel
  Engine having Variable Compression Ratio
  Advisor: Prof. Tated Rajendrakumar Giridharilal
- **M.E. in Heat Power Engineering**
  Savitribai Phule Pune University (M.C.O.E.R.I. Nashik) | 2017
  CGPA: 7.00/10.00 (First Class, Class Topper)
- **B.E. in Mechanical Engineering**
  Savitribai Phule Pune University (B.V.C.O.E. Nashik) | 2015
  Percentage: 65.26% (First Class)

## Core Technical Skills

- **AI/ML Frameworks**: PyTorch, TensorFlow, Keras, Scikit-learn
- **Modeling**: CNNs, ANNs, PINNs, Hybrid AI-Physics Models, Predictive Modeling
- **Optimization**: Self-Enhanced Wolverine Optimization Algorithm (SEWOA)
- **Programming**: Python (Expert), MATLAB (Expert), C++ (Proficient)
- **Libraries**: NumPy, Pandas, SciPy, Matplotlib, Seaborn
- **Simulation Tools**: ANSYS, OpenFOAM, COMSOL, MATLAB/Simulink, ICEngineSoft v24
- **Domains**: IC Engines, Thermodynamics, Heat Transfer, CFD, Reacting Flows

## Ph.D. Research Work

**Title**: Performance Analysis of Waste Cooking Oil with Nano Additives in Diesel Engine having Variable Compression Ratio

Guide: Prof. Tated Rajendrakumar Giridharilal

**Highlights**:

- Developed CNN-based model to predict engine performance and emissions
- Proposed and implemented SEWOA for optimization of nano-blend ratios
- Validated results using experimental data from test rigs at Apex Innovations Pvt. Ltd.

## Experimental Collaborations & Applied Research

**Kupwad MIDC, Sangli | Apex Innovations Pvt. Ltd. | 2023**

Executed a series of experiments on biodiesel blends using nanotechnology-enhanced additives.

- Collaborated with Apex Innovations to conduct performance and emission analysis of B20 biodiesel using IC Engine Soft v24 on a variable compression ratio diesel engine.
- Nanoparticles of Cerium Oxide ($CeO_2$) were introduced at multiple concentrations; AI-assisted tuning identified 46 ppm $CeO_2$ as the optimal blend for performance enhancement.
- Experiment validated thermal efficiency gains, emission reductions, and predictive modeling parameters for further deep learning applications.

## Academic, Industrial & Entrepreneurial Experience (2014–Present)

- Doctoral Researcher & Assistant Professor – Matoshri College of Engineering & Research Institute, Nashik (2023–Present)
- Independent Entrepreneur – Hospitality Sector (2016–Present)
- Graduate Researcher – M.E. Thesis, M.C.O.E.R.I. Nashik (2015–2017)
- Industrial Collaboration – Apex Innovations Pvt. Ltd., Kupwad MIDC, Sangli (2017)
- Industrial Project Intern – Gabriel India Ltd., Nashik (2014–2015)

**Total Professional Experience:** 10+ Years (Academic, Industrial, Entrepreneurial & Research)

## Teaching & Academic Engagement

- Courses handled: IC Engines, Heat Transfer, Thermodynamics, AI in Engineering.
- Guided undergraduate student projects involving simulation and design.
- Contributed to lab development and standard operating procedures.

## Industry Exposure

**Gabriel India Ltd., Nashik | 2014–2015**

Contributed to quality control improvements in front fork assembly, specifically targeting oil leakage reduction:

- Conducted root cause analysis, suggested seal redesigns, and supported implementation alongside production engineers.

## Entrepreneurial Experience

**Independent Venture | Hospitality Sector | 2016–Present**

- Managed operations, finances, and staff; built autopilot systems for smooth functioning with minimal oversight.
- Developed strategic thinking, real-time decision-making, and leadership skills.

| Publications and Conferences |
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| 1. Mohite, M. L., et al. (In Preparation). Diesel Engine Performance Modeling via Hybrid Deep Learning for Waste Cooking Oil Blended with Nano Additives. (Target: Applied Energy)<br>2. Mohite, M. L. (2023). Literature Review on Nano Additive Diesel Blends. 4th Int'l Conf. ICCCC-23.<br>3. Mohite, M. L. (2017). Natural Convection Heat Transfer from Perforated Plate. ICCCC-2017 & MECHPGCON-2017. |
| **Certifications & Additional Skills** |
| • **English Typewriting**: 60 WPM (Certified)<br>• **Hindi Typewriting**: 40 WPM (Certified) |
| **Sports & Leadership Achievements** |
| • **Football**: Represented at **District Level**; Captain of Inter-College Football Team.<br>• **Cricket**: Played at inter-college level in competitive tournaments. |
| **Awards and Recognition** |
| • **Class Topper, M.E. in Heat Power Engineering – 2017**<br>• **Selected for doctoral research collaboration at Apex Innovations Pvt. Ltd.** |