


# DIVYESH MISTRY

 [divyesh-mistry.github.io/webpage/](https://divyesh-mistry.github.io/webpage/)

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 Aerospace department, IIT - Bombay, Powai, Mumbai, Maharashtra 400076

## EDUCATION

### INDIAN INSTITUTE OF TECHNOLOGY - BOMBAY, MUMBAI, INDIA

2018-PRESENT

Doctor of Philosophy (Ph.D.), Aerospace Engineering

Stream : Aircraft Structures

Advisor : Dr. Amuthan A. Ramabathiran

### INDIAN INSTITUTE OF TECHNOLOGY - KHARAGPUR, WEST BENGAL, INDIA

2014

Master of Technology (M.Tech.), Mechanical Engineering,

Stream : Mechanical System Design

Advisor : Prof. Manas Chandra Ray

### AERONAUTICAL SOCIETY OF INDIA, NEW DELHI, INDIA

2013

Bachelor of Engineering, Aeronautical Engineering

Stream : Aero Mechanical

## RESEARCH PROJECTS

### HIERARCHICAL MULTISCALE MATERIAL MODELING OF NICKEL SUPERALLOYS

2018-PRESENT

Funding agency : Defence Metallurgical Research Laboratory (DMRL), India

- Led research on hardening mechanisms in nickel superalloys, focusing on the detrimental effects of Prior Particle Boundaries (PPBs) to advance aerospace materials.
- Developed a hierarchical multiscale material model integrating atomistic simulations, molecular dynamics using LAMMPS, and 2D Discrete Dislocation Dynamics (DDD) to understand dislocation behavior and strengthening mechanisms in the presence of PPBs.
- Utilized **LAMMPS**, **Ovito**, **Atomsk** and **Python** to expertly model and post-process the microstructure of nickel superalloys, gaining valuable insights into their mechanical behavior under extreme conditions.
- Presented groundbreaking research findings at the prestigious international 17th Conference of the COMPLAS Series (COMPLAS 2023), highlighting a significant contribution to this leading research forum.

### MPI-ENABLED MOLECULAR DYNAMICS (MD) CODE DEVELOPMENT FOR EFFICIENT PARALLEL SIMULATIONS

2019-2020

Funding agency : Industrial Research and Consultancy Centre (IRCC), India

- Developed an advanced Molecular Dynamics (MD) simulation code using C++ and MPI, implementing highly efficient parallel algorithms that significantly accelerated simulations and enabled investigations of larger systems and longer timescales than previously feasible.
- Collaborated with a team of experts to enhance the functionality and optimize the performance of a proprietary Molecular Dynamics (MD) simulation code. Contributed to the identification of areas for improvement and worked closely with colleagues to develop and implement new features, resulting in significant improvements to the code's overall capabilities.

Funding agency : Industrial Research and Consultancy Centre (IRCC), India

- Researched dislocation avalanche mechanisms and developed a custom simulation code using C++ and Python to investigate their behavior in metallic materials.
- Conducted extensive post-processing and analysis of simulation data to identify critical factors influencing avalanche dynamics.

## PUBLICATIONS AND CONFERENCE PROCEEDINGS


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[1] **Mistry D.**, Guruprasad P. J., & Ramabathiran A. A., "An atomistically informed discrete dislocation dynamics study of prior particles boundaries in Ni superalloys", in Proc., 17th Conference of COMPLAS Series, 05th-07th Sep 2023 Barcelona, Spain.

[2] **Mistry D.**, Guruprasad P. J., & Tawqeer N., "Polycrystalline Discrete Dislocation Dynamics Framework for Metallic Materials with Prior Particle Boundaries (PPB)", Manuscript under preparation.

## WORKING EXPERIENCE

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June 2016	<b>CMR INSTITUTE OF TECHNOLOGY</b> , DEPARTMENT OF MECHANICAL ENGINEERING, BANGALORE, INDIA
Dec 2018	 <b>Assistant Professor</b> <ul style="list-style-type: none"><li>➤ <b>Subject Taught</b><ul style="list-style-type: none"><li>ME 832 : Experimental Stress Analysis</li><li>ME 61 : Finite Element Methods</li><li>ME 15/25 : Elements Of Mechanical Engineering.</li><li>MEL 68 : Modeling and Analysis Lab</li></ul></li></ul>

## POSITION OF RESPONSIBILITIES

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June 2021 June 2022	<b>DEPARTMENT PLACEMENT COORDINATOR ( DPC )</b> , Indian Institute of Engineering Bombay, Aerospace Engineering, India <ul style="list-style-type: none"><li>➤ Coordinated with industry partners and facilitated the recruitment process of students for internships and full-time positions.</li><li>➤ Organized and conducted career development workshops and seminars to enhance students' employability skills.</li><li>➤ Assisted in the placement of students by reviewing resumes, conducting mock interviews, and providing personalized feedback.</li><li>➤ Maintained effective communication channels between students, industry partners, and the university administration to ensure smooth coordination of placement activities.</li></ul>
June 2014 June 2016	<b>TEACHING ASSISTANT</b> , Indian Institute of Engineering kharagpur, Mechanical System Design, India <ul style="list-style-type: none"><li>➤ Assisted professors in delivering course material, grading assignments and exams, and holding office hours, while also leading tutorial sessions, supervising laboratory experiments, and mentoring students.</li></ul>



## AWARDS, ACHIEVEMENTS , AND HONORABLE MENTIONS

- **MHRD POSTGRADUATE GATE FELLOWSHIP** 2014-2016  
Ministry of Human Resource Development, India
- **MHRD TEACHING ASSISTANTSHIP THROUGH PROJECT** 2018-Present  
Industrial Research and Consultancy Centre (IRCC), India
- All India rank **69** in Graduate Aptitude Test in Engineering (**GATE**) 2014



## PROFESSIONAL MEMBERSHIPS

AMAEI

**AERONAUTICAL SOCIETY OF INDIA, NEW DELHI, INDIA**

**Associate Member**

Membership No. : G12589

Aeronautical Society of India (AeSI) is the principal Society in India serving the professions in areas of aeronautics, aerospace and aviation.



## COMPETENCES

<b>Programming</b>	Python, C++, MATLAB, High Performance Computing (OpenMP, MPI)
<b>Atomistic Simulations</b>	LAMMPS, ATOMSK, OVITO
<b>FEA Simulations</b>	ANSYS, ABAQUS



## LANGUAGES

English ● ● ● ● ●  
Hindi ● ● ● ● ●

Gujarati ● ● ● ● ●  
Marathi ● ● ● ● ●



## REFERENCES

**Dr. Amuthan A. Ramabathiran**

*Assistant Professor, AEROSPACE ENGINEERING*  
Indian Institute of Technology - Bombay

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**Prof. P J Guruprasad**

*Professor, AEROSPACE ENGINEERING*  
Indian Institute of Technology - Bombay

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