Saurav Dutta

+91 8638887596
sauravdutta2145@gmail.com
sauravdutta@iisc.ac.in

Research Interests

Smart Materials, Data-Driven Mechanics, Multiscale Multiphysics, Vibrations and Wave Physics, Soft Robotics, and Architected Solids.

Education

National Institute of Technology, Silchar, India [Jul'19 - Jul'23]

Bachelor of Technology | Department of Civil Engineering

- *Cumulative GPA:* ***9.03/10*** *(Honours)*

Research Experience

Indian Institute of Sciences (IISc), Bengaluru, India

Research Assistant | *Mechanical Engineering* | *Advisor: Prof. Akshay Joshi* [Aug'24 - Present]

Project: ***Stress Unsupervised Learning of Heterogenous Materials***

- Surveyed literature on heterogeneous materials and the NN-EUCLID Framework.
- Worked on material modeling and simulation to extend the NN-EUCLID framework.
- Working on scripting Heterogenous EUCLID code in Python.

Indian Institute of Sciences (IISc), Bengaluru, India

Research Assistant | *Aerospace Engineering* | *Advisor: Prof. Rajesh Chaunsali* [Jun'23 - July'24]

Project I: ***Studying odd spring and odd damper in Periodic Lattices***

- Developed a generalized MATLAB code to study Odd Spring and Odd Damper in a spring-damper monomer.
- Analyzed dispersion relations analytically and numerically, connecting with finite chain analysis.

Project II: ***Experimental Realization of Time Periodic Stiffness in a Lattice***

- Developed Python code for Motor Control.
- Designed and 3D Printed Pendulum and Disc models with integrated motors.
- Built a 1-DOF pendulum system with Fixed-Fixed BC for initial study.

National Institute of Technology (NIT), Silchar, India

Undergraduate Research Student | *Civil Engineering* | *Advisor: Prof. Atanu Sahu* [Jan'23 - May'23]

Project: ***Static and Dynamic Analysis of a Laminated Composite Plate under Thermal Effects using ABAQUS***

- Surveyed literature on laminated composite plates and their behavior under various conditions.
- Modeled and analyzed laminated composite plates in ABAQUS, applying diverse boundary, loading, and thermal conditions.
- Conducted static and dynamic analysis, including meshing and post-processing.

Indian Institute of Technology (IIT) BHU, Varanasi, India

Summer Research Intern | *Civil Engineering* | *Advisor: Prof. Vishwajit Anand* [May'22 - July'22]

Project: ***Characterization of Ground Motions***

- Worked on the development of a generalized code concerning an open-source software OpenSeismoMatlab.
- Wrote a generalized code in MATLAB that estimates more than 30 ground motion parameters and includes some new parameters.

Scholastic Achievements & Invited Talks

- **Invited talk**: Guest Lecturer, *Wave Propagation in Designed Materials*, IISc, Bangalore [Nov'23]
- Achieved **AA** grade in Bachelors thesis Project I and II in 7^{th} and 8^{th} semester based on exceptional performance [May'23]
- Attained **AA** grade in **17** out of **27** department courses based on exceptional performance [May'23]
- Selected as an Undergraduate Research Student under one of the Undergraduate Research Council Funded Project in 7^{th} semester at NIT, Silchar [Dec'22]
- **Top 5 Percentile Achievement in JEE Mains**: Honored by **Glorius NGO** for outstanding performance among Barak Valley students [Aug'19]
- Cleared Pre-Regional Mathematical Olympiad (PRMO) and Regional Mathematical Olympiad (RMO) ['17]

Publications

a. Journals

- *"Odd Spring and Odd Damper in Periodic Lattices"* (Manuscript in Preparation)
- Manish Kumar, Srishti, **Saurav Dutta**, Vishwajit Anand, "Identification of critical ground motion features for seismic fragility studies considering soil-structure interaction" (under review)

b. Conferences

8^{th} International Conference On Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics (8ICRAGEE) [Dec '24]
Saurav Dutta, Vishwajit Anand,"Framework for Ground Motion Characterization" (Accepted)

Leadership Activities

Social	• Served as **Head** at the **School Genius** organized by **Tecnoesis, NIT, Silchar** ['22] • Served as **Head** at the **Razzmatazz** organized by **Incandescence, NIT, Silchar** ['23]

Technical Skills

Languages : MATLAB, Python, Mathematica, LaTeX, HTML, CSS, C++, C;
Software : CATIA, ANSYS, COMSOL Multiphysics, AutoCAD, Abaqus, Dynamixel Wizard 2.0;
Experimental : Motor Control, Arduino, U2D2, Laser Doppler Vibrometer, 3D Printing

References

Prof. Akshay Joshi
Assistant Professor, Mechanical Engineering
IISc, Bengaluru, India
Website|akshayjoshi@iisc.ac.in

Prof. Rajesh Chaunsali
Assistant Professor, Aerospace Engineering
IISc, Bengaluru, India
Website|rchaunsali@iisc.ac.in

Prof. Vishwajit Anand
Assistant Professor, Civil Engineering
IIT BHU, Varanasi, India
Website|anand.civ@iitbhu.ac.in

Prof. Atanu Sahu
Assistant Professor, Civil Engineering
NIT, Silchar, India
Website|atanu@civil.nits.ac.in