

Prasanna Mondal

✉ ed21s003@smail.iitm.ac.in

🌐 <https://www.linkedin.com/in/prasanna-mondal-119332165/>

Personal email: prasannamondal34@gmail.com



Education

Program	Institution	CGPA	Year
M.S. (Engineering Design) (Guide: Professor Jayaganthan R)	IIT Madras, TN, India	9.18/10	2021-Ongoing
B.E. (Mechanical Engineering)	Jadavpur University, WB, India	8.9/10	2016 – 2020

Research Experience Summary

- Used Additive manufacturing for preparing solid and auxetic specimens for testing.
- Used Abaqus for Static and Dynamic FEA analysis of auxetics.
- Conducted Static Compression test and Split Hopkinson Pressure bar (SHPB) test for Static and Dynamic material characterization of Poly Lactic Acid.
- Conducted Drop mass test to validate the results from numerical simulation of it using the material data extracted from Static Compression and SHPB test.
- Conducted analytical investigation to obtain elastic properties of auxetics under longitudinal and transverse static loading conditions and validated the analytical results with results of numerical simulation done using Abaqus.
- Used MATLAB to write codes from scratch to extract data and plot results for all the studies.

Master's Course Work

1. Relevant Master's Courses

August 2021-December 2023

(Core and electives)

IIT Madras

- Advanced Mechanics of Solids; Finite Element Analysis; Materials, Mechanics, and Design; Pattern Recognition and Machine Learning; Optimization Methods for Mechanical Design; Impact Mechanics.

Course Projects

1. Project 1, Faculty: Prof. Arun Rajkumar

Jan-May 2022

(M.S.), Classifier to predict spam or ham mails

IIT Madras

- Used Naive Bayes theorem to create the predictor. Used 130 'spam' and 'ham' emails to train the classifier and finally tested it on two emails to figure out whether it was giving correct results (Tool: MATLAB).

2. Project 2, Faculty: Prof. Debabrata Nag

Aug-Dec 2019

(B.E.), Studies on Post Elastic Behavior of Beams Made of Elastoplastic Material

IIT Madras

- Analyzed the maximum amount of load a beam can take before it can fail plastically, and also the amount of load related to a certain depth of yielding for various cross sections (Mathematical Analysis).

Technical Skills

MATLAB, Abaqus, nTopology, Overleaf, Microsoft Office, AutoCAD, Fusion 360, Inkscape.

Publications

- A journal paper titled '*Parametric Study of S-structure: Analytical and Numerical Investigation*' was rejected recently, and I am working on incorporating the valuable reviews.
- A paper with the title, '*Theoretical and Numerical Simulation of Static properties of S-shaped auxetic structures under Transverse load*', is currently submitted to 'Materials' journal of MDPI.
- Filed an Indian complete patent titled '*A Rear Underrun Protection Assembly of a Vehicle and a Vehicle thereof*' with the application number 202341074303, on 31st October, 2023.
- Authored the papers titled '*Review of mechanical properties and impact response of PLA auxetic structures*' and '*Impact behavior of auxetic structures: Experimental and numerical analysis*' in Materials Today: Proceedings (June 2023).
- Co-authored a paper titled '*Control of Lean Blowout in Partially Premixed Swirl-Stabilized Combustor Using a Fuel Rich Central Pilot Configuration*' (published in the 'Gas Turbine India Conference' of ASME on January 24, 2020).

Conferences

- Gave an oral presentation in ICMAT 2023, organized by Materials Research Society of Singapore, c/o School of Materials Science and Engineering, Nanyang Technological University (June 2023).
- Presented a paper in, IMPLAST 2022 conducted by IIT Madras (Aug 2022).

Workshops

Actively participated in the following workshops:

- 3D Printed Auxetic Structures of Soft and Hard Materials and its High Strain Rate Studies conducted by IIT Madras (Sep 2022).
- Recent Advances in Modelling of Materials-Part2, organized by Indian Society of Applied Mechanics (2022).
- Problem-based learning of MATLAB programming, organized by Workshop and Skill-building team, Career Development Cell-Research, IIT Madras (Jan 2022).

Work Experience

1. Linde India Limited

Nov 2020 - Jul 2021

(Mechanical Design Department/Mentor: Mr. Soumik Ghosh)

Linde India Limited, Kolkata

- Learned about drawing and designing cryogenic tanks, e.g., liquid Nitrogen, Argon, and Oxygen storage tanks, the overall function of various components, and relevant ASME BPVC codes.

Achievements and Competitions

- Received *Institute Research Award* in the July-November semester of 2023 at IIT Madras.
- Competed in *Bright Optimizer 2022*, an optimization competition, where we need to optimize the weight of a truss-based structure while not crossing stress and displacement-based constraints.
- Competed in Kshitij in 2017 and 2018, the techno-management fest of IIT Kharagpur, and came in the top 10 of Nightshift event in both years, which is based on theoretical and practical knowledge of engineering mechanics.
- Qualified *GATE* (2020) with a rank of 2141 among 137826 candidates.

Positions of Responsibility

- *Teaching Assistant* for Design of Mechanical Systems, Engineering Design Department, IIT Madras (Jan-May 2023).
- *Coordinator* in Career Development Cell-Research, IIT Madras (2021-2022).

Student Membership

- Graduate Student Member of *ASME* from December 2022.
- Student Member of *ISAM* from 2021-2022.
- Student Member of *ISHRAE* from 2018-2019.

Others

- Hobbies: Cricket, Writing Science related blogs
- Languages known: Bengali, Hindi, English.