Nafisa Mehtaj

PhD Student in Mechanical Engineering
University of South Carolina

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LinkedIn
Google Scholar

Work Experience

Graduate Research Assistant [Aug,2023-Present]
i-MAPS (Integrated Material Assessment & Predictive Simulation Laboratory)
Department of Mechanical Engineering
University of South Carolina

- Developing artificial neural network model to predict crack propagation of different aluminum specimens based on different features
- Literature review on Nondestructive Evaluation methods (ultrasonics and others) for Hypersonic Composites (C-C composite, Ceramic Matrix Composites (CMC))
- Guiding undergrad students to use the Computer Vision Annotation Tool (CVAT) for developing dataset for peach tree thinning automation model.
- Analyzing data for material memory project using unsupervised machine learning methods (Ongoing)
- Developing Physics Informed Neural Network (PINN) Model using wave propagation data generated by Peridynamic method (Ongoing)

Adjunct Lecturer(Part-Time) [Jun,2022-Dec,2022]
Department of Naval Architecture and Offshore Eng
Bangabandhu Sheikh Mujibur Rahman Maritime University

- Numerical Methods in Engineering Lab (Designing the course plan and conducting two classes total of 55students to learn solving various numerical methods using MATLAB)

Research Assistant [Apr,2021-Jul,2023]
Department of Naval Architecture and Marine Engineering (NAME)
Bangladesh University of Engineering and Technology (BUET)
Project: "Safety Envelope for Ship Recycling Practices in Bangladesh: Hazard Identification and Risk Evaluation"

- Conducting surveys and gathering evidence-based knowledge of the ship recycling industry.
- Developing mathematical models to quantify risk and map out best decisions from multiple alternatives.
- Necessary Administrative works (Budget, Report, etc.).

Academic Credentials

Doctor of Philosophy (Ph.D.) in Mechanical Engineering [Aug,2023-Present]
University of South Carolina
Bachelor of Science (B.Sc.) in NAME [Feb,2016-Feb,2021]
Bangladesh University of Engineering and Technology

Tools and Skills

Python   MATLAB   Machine Learning   Abacus   AutoCAD   Microsoft Office   Adobe Photoshop

Research Interest

1.Computational Physics   2. Machine Learning   3.Finite Element Method   4. Thermal and Fluid Science

Publications

1) S BANERJEE, **N MEHTAJ**, BL GRISSO. "*Development of an Artificial Intelligence (AI) for the Prediction of Fatigue Failure in Naval Structures: A Digital Twin Application*". STRUCTURAL HEALTH MONITORING 2023.
2) II Monisha, **N Mehtaj**, ZI Awal, "*A Step Towards Imo Greenhouse Gas Reduction Goal: Effectiveness of Machine Learning Based Co2 Emission Prediction Model*". Proceedings of the 13th International Conference on Marine Technology (MARTEC 2022).
3) **N Mehtaj**, , S.S Dipto., N.M.G Zakaria., ZI Awal, M.A Hannan, and A.K Dev, " *A techno-economic study on ship recycling practices in Bangladesh: from safety perspective*", published in the 3rd International Conference on the Decommissioning of Offshore & Subsea Structures: 21-22 February 2022, UK.
4) SS Dipto, R Hafizur, **N Mehtaj**, MS Mawla, NM Zakaria, AK Dev,A . "*Study on the Financial Feasibility of Compliant Ship Recycling Yards in Bangladesh*". Proceedings of the 13th International Conference on Marine Technology (MARTEC 2022).
5) P Halder, **N Mehtaj**, NM Zakaria. "*SWOT Analysis of Shipbuilding Industry of Bangladesh in the light of IR4.0*". Proceedings of the 13th International Conference on Marine Technology (MARTEC 2022).
6) ZI Awal, **N Mehtaj**, RI Pranto. "*Heave Motion Prediction of Rectangular Floating Barge Using Artificial Neural Network*." Proceedings of the ASME 2021 International Mechanical Engineering Congress and Exposition. Volume 7A: Dynamics, Vibration, and Control. Virtual, online. November 1–5, 2021. V07AT07A052. ASME.

Project and Industrial Training

Design of a 1600 DWT (Tones) Inland Oil Tanker   [Apr, 2018-Apr, 2019]
Industrial Training, Chittagong Dry Dock Limited- Bangladesh Navy   [Nov, 2018]

Online Certificate Courses

Neural Networks and Deep Learning (deeplearning.ai)
Improving Deep Neural Networks: Hyperparameter tuning, Regularization, and Optimization (deeplearning.ai)
Machine Learning with Python (IBM)
Excel Skills for Business: Essentials (MACQUARIE University)

Extra-Curricular Activities and Achievements

Champion at Mechanical Festival Photographic Competition 2018
Honorable Mention at EEE DAY 2018 Photography Competition
Third Prize at NAME Fest Photographic Competition 2018
Acceptance of several photographs on international and national level photography exhibition
Joint Secretary at BUET Photographic Society-BUETPS [June 2019-Jan2021]
Organizing Team Member of Model Ship Propulsion Competition 2019, Model Ship Propulsion
Competition 2018, NAME FEST 2018, Voyage of Visuals, BUETPS Presents: 13th Annual Exhibition

Reference

Dr. Sourav Banerjee   Dr. Zobair Ibn Awal
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College of Engineering and Computing   Department of Naval Architecture and Marine Engineering
University of South Carolina   Bangladesh University of Engineering and Technology
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