Saptadeep Biswas

Research Scholar · Operation Research · Supply Chain Optimization · Artificial Intelligence · Disaster Risk Reduction

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Education

National Institute of Technology Agartala, India — *Coursework Grade: **CGPA (8.07/10)***

PhD Scholar, DST INSPIRE Fellow — *2021 - Present*

Thesis Topic: A Study on Intelligent Disaster Management: Implementing AI-based Prediction and Logistics Optimization Techniques

Supervisor: Prof. Uttam Kumar Bera (Professor, Department of Mathematics, National Institute of Technology Agartala, India. Email: bera_uttam@yahoo.co.in / uttam.math@nita.ac.in)

Outcome: Five peer-reviewed SCIE publications in high-ranked journals (all Q1) Journal of Cleaner Production (Q1, SCIE, IF 9.7), Annals of Operations Research (Q1, SCIE, IF 4.4), Neural Computing and Applications (Q1, SCIE, IF 4.5), International Journal of Disaster Risk Reduction (Q1, SCIE, IF 4.2), Computer Methods in Applied Mechanics and Engineering (Q1, SCIE, IF 6.9). Additionally, I have one peer-reviewed publication in Scopus with a CiteScore of 2.0 (2023), one peer-reviewed journal paper, one book chapter published by Springer, participation in one international symposium, and two international conferences. I have also established four international collaborations with leading researchers worldwide. I was awarded the INSPIRE Fellowship from the Department of Science and Technology, India, which covers all my expenses for the entire duration of my PhD program, lasting five years.

National Institute of Technology Agartala, India — *Grade: **CGPA (7.87/10)***

BS-MS Dual Degree in Mathematics — *2013-2018*

Institute of Advanced Studies in Education, Tripura, India — *Grade: **CGPA (9.16/10)***

Two-year Full Time B.Ed. programme — *2018 - 2020*

Research Interests

- **Supply chain resilience**
- **Artificial Intelligence**
- **Optimization Algorithms**
- **Operations Research**
- **Supply Chain Optimization**
- **Disaster Risk Reduction**
- **Machine Learning Applications**

Honors & Awards

DST INSPIRE Fellowship (2021-2025), Department of Science and Technology, Govt. of India.

Scholarship for Higher Education (SHE) (2013-2018), INSPIRE, Department of Science and Technology, Govt. of India.

Runner-Up Prize in Eastern India Science Fair (EISF) 2012 Quiz, Birla Industrial and Technological Museum, Kolkata, 2012.

Secured First place in State level Science Exhibition 2012 Quiz competition, Agartala, 2012.

Technical Skills

- **Operational Research:** LINGO, MATLAB, PYTHON, PYOMO, PYMOO.
- **Optimization Algorithms/Metaheuristics:** MATLAB
- **Artificial Intelligence:** PYTHON.
- **Machine Learning:** PYTHON.

Journal Publications

1. **Saptadeep Biswas**, Gyan Singh, Binanda Maiti, Absalom El-Shamir Ezugwu, Kashif Saleem, Aseel Smerat, Laith Abualigah, Uttam Kumar Bera (2024). **Integrating Differential Evolution into Gazelle Optimization**

for advanced global optimization and engineering applications. Computer Methods in Applied Mechanics and Engineering, 434, 117588.

- **DOI:** https://doi.org/10.1016/j.cma.2024.117588

2. **Biswas, S.**, Kumar, D., Nas, M., Softa, M., Akgün, E., & Bera, U. K. (2024). **Performance of a Five-Layer ANN Model for Earthquake Magnitude Prediction and Spatial Risk Mapping in Turkey.** Decision Making Advances, 3(1), 40–49.

   - **DOI:** https://doi.org/10.31181/dma31202553

3. **Biswas, S.**, Belamkar, P., Sarma, D., Tirkolaee, E. B., & Bera, U. K. (2024). **A multi-objective optimization approach for resource allocation and transportation planning in institutional quarantine centres.** Annals of Operations Research, 1-45.

   Annals of Operations Research (Q1)DOI: https://doi.org/10.1007/s10479-024-06072-8

4. **Biswas, S.**, Shaikh, A., Ezugwu, A. E. S., Greeff, J., Mirjalili, S., Bera, U. K., & Abualigah, L. (2024). **Enhanced prairie dog optimization with Levy flight and dynamic opposition-based learning for global optimization and engineering design problems.** Neural Computing and Applications, 1-34.

   - **DOI:** https://doi.org/10.1007/s00521-024-09648-4

5. **Biswas, S.**, Kumar, D., Hajiaghaei-Keshteli, M., & Bera, U. K. (2024). **An AI-based framework for earthquake relief demand forecasting: A case study in Türkiye.** International Journal of Disaster Risk Reduction, 102, 104287.

   - **DOI:** https://doi.org/10.1016/j.ijdrr.2024.104287

6. Belamkar, P., **Biswas, S.**, Baidya, A., Majumder, P., & Bera, U. K. (2023). **Multi-objective optimization of agro-food supply chain networking problem integrating economic viability and environmental sustainability through type-2 fuzzy-based decision making.** Journal of Cleaner Production, 421, 138294.

   - **DOI:** https://doi.org/10.1016/j.jclepro.2023.138294

7. **Biswas, S.**, Belamkar, P., & Bera, U. K. (2023)(in press). **A redistribution-based multi-stage humanitarian logistic design model considering the spherical fuzzy methodology.** International Journal of Logistics Systems and Management, 1(1).

   - **DOI:** https://doi.org/10.1504/IJLSM.2023.10060514

8. **Biswas, S.**, KUMAR, D., & Bera, U. K. (2023). **Prediction of earthquake magnitude and seismic vulnerability mapping using artificial intelligence techniques: A case study of Turkey.**

   - Preprint: DOI: https://doi.org/10.21203/rs.3.rs-2863887/v1

Conference Publications

1. **EVALUATION OF ARTIFICIAL NEURAL NETWORKS IN PREDICTING EARTHQUAKE MAGNITUDES AND ASSESSING RISKS IN TÜRKIYE**

   - Published in Conference: 2nd International Graduate Studies Symposium on Geoscience, DEU INTERNATIONAL SYMPOSIUM SERIES ON GRADUATE RESEARCHES-2023, At: Dokuz Eylül University, Izmir, Turkey.

2. **A Spherical Fuzzy-MARCOS-based Decision-Making Model for Optimizing UAV Landing Zone Selection and Payload Delivery**

   - Accepted and Presented in ICONIEA 24, Department of Industrial and Systems Engineering, Indian Institute of Technology Kharagpur, Springer Book Chapter.

3. **Testing of Advanced Machine Learning for Flood Forecasting: A Case Study of the Gumti Basin in Tripura, India**

   - Accepted and Presented in Roorkee Water Conclave (RWC) 2024, IIT Roorkee and NIH Roorkee, Mar 03 - 06, 2024.

4. Mishra, K., **Biswas, S.**, & Bera, U. K. (2022, April). **Solution of Stochastic Transportation Problem Involving Multi-choice Constraints of Exponential Distribution using Lagrange's Interpolation.** In 2022 IEEE 7th International conference for Convergence in Technology (I2CT) (pp. 1-6). IEEE.
    - DOI: `https://doi.org/10.1109/i2ct54291.2022.9825146`
5. Ankur, S., Majumder, P., Bera, U. K., & **Biswas, S.** (2022, July). **A co-operative game theoretical strategy of Vendor and Buyer in an EPQ model of deteriorating items under trade credit policy.** In 2022 IEEE Region 10 Symposium (TENSYMP) (pp. 1-6). IEEE.
    - DOI: `https://doi.org/10.1109/tensymp54529.2022.9864527`

Book Chapter Publication

1. **A Spherical Fuzzy-MARCOS-based Decision-Making Model for Optimizing UAV Landing Zone Selection and Payload Delivery**
    - Accepted and Presented in ICONIEA 24, Department of Industrial and Systems Engineering, Indian Institute of Technology Kharagpur, Springer Book Chapter.

Reviewer Role

I actively contribute to the academic community by serving as a reviewer for several prestigious international journals, including:

- **Journal of Cleaner Production (IF 9.7)**
- **Annals of Operations Research (IF 4.4)**
- **Engineering Applications of Artificial Intelligence (IF 7.5)**
- **Journal of Environmental Management (IF 8.0)**
- **Journal of Intelligent Manufacturing (IF 5.9)**
- **Neural Computing & Applications (IF 4.5)**
- **Swarm and Evolutionary Computation (IF 8.2)**
- **OPSEARCH (IF 1.4)**
- **Risk Management and Healthcare Policy (IF 2.7)**
- **PLOS ONE (IF 2.9)**

Teaching and Pedagogical Experiences

As a dedicated and passionate educator at the National Institute of Technology Agartala, India, I have enhanced the educational experience for students enrolled in various Engineering Mathematics courses. Below are the details of the courses I have taught:

- **M-101: Engineering Mathematics-I** (Autumn Semester)
  Topics: Functions of Several Variables, Laplace Transform
- **M-201: Engineering Mathematics-II** (Spring Semester)
  Topics: Integral Calculus, Vectors
- **M-301: Engineering Mathematics-III** (Autumn Semester)
  Topics: Probability and Statistics
- **M-401: Engineering Mathematics-IV** (Spring Semester)
  Topics: Operations Research, Numerical Analysis

Professional Membership

- IEEE: Kolkata Section, R10 -Asia and Pacific, India.
- Soft Computing Research Society, New Delhi, India.
- Tripura Mathematical Society, Agartala, India.