# 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**  *Course work grade:* **CGPA (8.07/10)**
PHD SCHOLAR, DST INSPIRE FELLOW  *2021 - ongoing*

**Institute of Advanced Studies in Education (IASE), Tripura, India**  *Grade:* **CGPA (9.16/10)**
TWO YEAR FULL TIME B.ED. PROGRAMME  *2018 - 2020*

**National Institute of Technology Agartala, India**  *Grade:* **CGPA (7.87/10)**
BS-MS DUAL DEGREE IN MATHEMATICS  *2013-2018*

## Internships / Research Projects

**Indian Institute of Technology Guwahati**  *Guwahati, India*
SUMMER INTERNSHIP PROGRAM - 2016  *2016*
- Under the guidance of Prof. Natesan Srinivasan at Department of Mathematics.
- Project titled "Efficient Numerical Methods for Singularly Perturbed Differential Equations".

**Indian Institute of Technology Patna**  *Patna, India*
GLOBAL INITIATIVE OF ACADEMIC NETWORKS COURSE ON MULTI-OBJECTIVE OPTIMIZATION-2016  *2016*
- Under the guidance of Dr. Carlos Artemio Coello Coello from CINVESTAV-IPN, Mexico.

**National Institute of Science Education and Research**  *Bhubaneswar, India*
TRAINING PROGRAM IN MATHEMATICS - 2015  *2015*

**Dibrugarh University**  *Dibrugarh, Assam, India*
MATHEMATICS TRAINING AND TALENT SEARCH PROGRAM (MTTS) - 2015  *2015*

## 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

- **Mathematical Modelling:** LINGO, MATLAB, PYTHON, PYOMO, PYMOO.

- **Operational Research:** LINGO, MATLAB, PYTHON, PYOMO, PYMOO.

- **Disaster Response Logistics:** Mathematical Modelling, Operation Research, Optimization Algorithms.

- **Artificial Intelligence:** PYTHON.

- **Machine Learning:** PYTHON.

## Research Publications

1. **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.

   - **Published**: 9th September 2024, **Decision Making Advances**

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

2. **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.

   - **Published**: 9th July 2024, **Annals of Operations Research (Q1)**
   - **DOI**: https://doi.org/10.1007/s10479-024-06072-8

3. **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.

   - **Published**: 30th March 2024, **Neural Computing and Applications (Q1)**
   - **DOI**: https://doi.org/10.1007/s00521-024-09648-4

4. **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.

   - **Published**: 20th January 2024, **International Journal of Disaster Risk Reduction (Q1)**
   - **DOI**: https://doi.org/10.1016/j.ijdrr.2024.104287

5. 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.

   - **Published**: 4th August 2023, **Journal of Cleaner Production (Q1)**
   - **DOI**: https://doi.org/10.1016/j.jclepro.2023.138294

6. **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).

   - **Accepted**: 3rd August 2023, **International Journal of Logistics Systems and Management**
   - **DOI**: https://doi.org/10.1504/IJLSM.2023.10060514

7. **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.

8. **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.

9. **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.

10. **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

11. 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

12. 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`

## Reviewer Role

As a reviewer, I actively contribute to the scholarly community by evaluating manuscripts for several prestigious journals. My review activities include reviewing for the *Annals of Operations Research*, *Engineering Applications of Artificial Intelligence*, and the *Journal of Cleaner Production*. I have also provided feedback for the *Journal of Environmental Management*, *Journal of Intelligent Manufacturing*, *Neural Computing & Applications*, and *Swarm and Evolutionary Computation*. Additionally, I have reviewed manuscripts for *Risk Management and Healthcare Policy* and *PLOS ONE*. These roles enable me to contribute to maintaining the quality and rigour of research in my areas of expertise, including operations research, supply chain management, artificial intelligence, and disaster management.

## 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: 1. M-101: Engineering Mathematics-I (Autumn Semester) (Topics: Functions of Several Variables, Laplace Transform); 2. M-201: Engineering Mathematics-II (Spring Semester) (Topics: Integral Calculus, Vectors); 3. M-301: Engineering Mathematics-III (Autumn Semester) (Topics: Probability and Statistics); 4. M-401: Engineering Mathematics-IV (Spring Semester) (Topics: Operations Research, Numerical Analysis).

## References

**PhD Supervisor Prof. Uttam Kumar Bera**, National Institute of Technology Agartala, India

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`uttam.math@nita.ac.in`

**Collaborator Prof. Mostafa Hajiaghaei-Keshteli**, Tecnológico de Monterrey, Mexico

`mostafahaji@tec.mx`

**Collaborator Prof. Erfan Babaee Tirkolaee**, Istinye Universitesi, Turkey

`erfan.babaee@istinye.edu.tr`

**Collaborator Prof. Absalom El-Shamir Ezugwu**, North-West University, South Africa

`absalom.ezugwu@nwu.ac.za`

**Collaborator Prof. Laith Abualigah**, Al Al-Bayt University, Jordan

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**Collaborator Prof. Seyedali Mirjalili**, Torrens University, Australia

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**Collaborator Prof. Vladimir Simic**, University of Belgrade, Serbia

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