Md Rakib Hasan

Dhaka, Bangladesh | rakibhhridoy@yahoo.com | www.rakibhhridoy.xyz | +8801875545062

EDUCATION

University of Dhaka; Dhaka, Bangladesh — Jan 2020- Feb 2025

Bachelor of Science (B. Sc) in Soil, Water & Environment, DU BATCH: 99

CGPA: 3.62/4.00;
Research Project: "*Health Risk Assessment from Heavy Metals in Dried Fish of Dhaka*"
Supervisor: Dr. ASM Mohiuddin

Government Bangla College; Dhaka, Bangladesh

Higher Secondary Certificate (HSC) — Graduated in 2019

Letter Grade: A (Mathematics), A (Physics), A (Biology), A- (Chemistry), A* (ICT), A (English)

Lalmatia Housing Society School & College; Dhaka, Bangladesh — Graduated in 2017

Secondary School Certificate (SSC)

Letter Grade: A* (Mathematics), A* (Physics), A* (Biology), A* (Chemistry), A* (ICT), A* (English)

EXPERIENCE

Stanford University; **Code In Place 2025** — Mar 2025 - May 2025

Section Leader

- Led the class of 9 international students to teach CS106A/B program of Stanford University Syllabus. Provided detailed feedback and grading on assignments and exams.
- Collaborating with Dr. Chris Piech & Dr. Mehran Sahami to enhance course materials.

Atomic Energy Center; **Bangladesh Atomic Energy Commission** — Mar 2024 - Nov 2024

Research Assistant, Chemistry Division

- Developed and deployed deep learning models using TensorFlow and Scikit-Learn for water quality forecasting, enhancing environmental monitoring of the Turag, Buriganga, Shitalakshya, Dhaleshwari, and Balu rivers.
- Analyzed water pollution dynamics and documented findings in 7+ study, contributing to 10+ journal articles under supervision of **Dr. Yeasmin Nahar Jolly* (Cheif Scientific Officer, Chemistry Division, Atomic Energy Center)

Department of Soil, Water And Environment; **University of Dhaka** — Mar 2023 - Nov 2024

Research Assistant, Soil & Water Laboratory

- Led 15+ analytical chemistry and deep learning projects to assess the impact of soil, sediment, and water quality on human health, analyzing over 500 samples across the Gangetic Delta.
- Used 5+ mathematical and statistical approaches to improve soil organic carbon (SOC) model accuracy by 15%.
- Contributed to 7+ peer-reviewed journal articles on analytical and AI-driven solutions for environmental sustainability supervised by **Dr. ASM Mohiuddin* (Chairman, Department of Soil, Water & Environment)

PUBLICATION

Journal of Next Research, Elsevier (Under review)

Hasan, M. R., Rahman, A., Zubyer, S., & Jolly, D. Y. N. Comparative analysis of water quality forecasting of enhanced CNN, RNN, LSTM, GRU-based multivariate and univariate deep learning architectures for the urban Turag River.

Journal of Biological Science, University of Dhaka (Under review)

Uddin, M. J., Hasan, M. R., Arabi, F. Z., & Ali, A. Z. Spatial soil variability and carbon dynamics in the Moribund Delta of the Ganges of Bangladesh.

Journal of Environmental Science Ecosystem, Elsevier (Manuscript completed)

Hasan, M. R., Arabi, F. Z., Uddin, M. J., & Mohiuddin, A. S. M. The potential soil organic carbon stocks in Sundarbans tidal mangrove forest ecosystem of Bangladesh.

Journal of Environmental Geochemistry and Health, Elsevier (Manuscript completed)

Rahman, A., Hasan, M. R., Zubyer, S., Jolly, Y. N., & Akter, S. (Manuscript completed). Heavy metals and health risk assessment of Buriganga, Shityalakshya, Balu, Turag, Dhaleshwari river sediments and water around Dhaka.

RESEARCH

Project Demeter
Principal Investigator, **Project Lead**
Affiliations: Institute of Water Modeling (IWM) (**Access Sanction**), Atmospheric & Environmental Chemistry Laboratory, Atomic Energy Center, BAEC (**Access Sanction**), Department of Soil, Water & Environment, University of Dhaka (**Principal Sanction**)

Scope: Ongoing projects involving *Soil Organic Carbon Ensemble Deep learning Modeling using Multi-scaler data fusion mechanism* for publications in international journals, organizing undergraduate research programs and training sessions.

Laboratory Experiences

Dry Lab & Computational Analysis -

Statistical Modeling: PCA, correlation/cluster analysis (R/Python), Monte Carlo Simulation.
Deep Learning: TensorFlow/Keras for forecasting; Hyperparameters optimization, Bayesian optimization.
Geospatial Tools: QGIS+Python, Remote Sensing, Temporal dependencies (ACF/PACF), Seasonal decomposition, and feature importance (SHAP) analysis.

Wet Lab Techniques -

Soil/Sediment Analysis: Bulk density (core method), particle size (hydrometer), SOC (Walkley-Black), TN (Micro-Kjeldahl), CEC (ammonium acetate).
Water Quality: Metal digestion (HNO_3/HCl microwave), filtration (Whatman No. 42), trace metal quantification (EDXRF).
Quality Control: Triplicate measurements, CRM calibration, and procedural blanks to ensure data accuracy.

Field Sampling & Environmental Monitoring -

- Conducted field campaigns in ecologically critical zones (Sundarbans mangrove forest, Dhaka rivers) to collect water, sediment, and soil samples.
- Designed stratified sampling protocols for rivers (Buriganga, Turag) and mangrove soils (0–100 cm depth profiles), accounting for seasonal variations.
- Performed on-site measurements (pH, EC, DO, turbidity) using calibrated instruments, ensuring sample integrity via cold-chain transport.

TECHNICAL PROFICIENCES

Languages: English (Fluent), Bengali (Native), Hindi (Native)
Programming Languages: Python (4Y), R (3Y), SQL (3Y)
Data Handling & Visualization: Pandas, Numpy
Cloud Computing: Amazon Web Services (AWS), Azure, Google Cloud Platform
Machine Learning: Scikit-Learn, TensorFlow, Pytorch
App Development: Django, Flask

EXTRACURRICULAR ACTIVITIES

Secretary Technica
GeoBiome Club
Department of Soil, Water & Environment
University of Dhaka

Student
Stanford University
Code In Place 2024

REFERENCES

Dr. Md. Akhter Hossain Khan
Vice Chancellor
State University of Bangladesh
vc@sub.edu.bd

Dr ASM Mohiuddin
Chairman
Department of Soil, Water & Environment, University of Dhaka
asm.mohiuddin@du.ac.bd

Dr. Yeasmin Nahar Jolly
Chief Scientific Officer
Atomic Energy Center.
jolly_tipu@yahoo.com