Shihab Ahmad **Shahriar**

Environmental Scientist · PhD Student

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Summary

Experienced in data-driven decision-making for natural environment with a background in environmental science, and modeling. I am interested in model development of atmosphere and climate and assessing the effects of climate change along with atmospheric pollution. I am skilled at mapping using geographic information system (GIS) softwares, mainly with ArcGIS and my strong part is analyzing big data, visualizing them, and interpret them in a result. I am looking for a position related to GIS and Data Analysis in the filed of environmental Science in a reputed organization.

Work Experience

Department of Earth and Atmospheric Sciences, University of Houston

Houston, TX, USA

Graduate Research Assistant

June 2024 - Continue

- Assess Wildfire Risk Over the CONUS: Conduct comprehensive research to evaluate and predict wildfire risks across the Continental United States using advanced data analysis and modeling techniques
- Preparation and Process of NetCDF Files of Meteorological Data: Manage and process large datasets in NetCDF format, ensuring accuracy and reliability of meteorological data for research purposes
- Development of Newly Evolved Deep Learning Models in Atmospheric Science: Design and implement cutting-edge deep learning models tailored for atmospheric science applications, enhancing predictive capabilities and contributing to the field's advancement
- Create Research Proposals: Develop detailed and compelling research proposals, securing funding and support for ongoing and future research projects

Department of Earth and Atmospheric Sciences, University of Houston

Houston, TX, USA

Graduate Teaching Assistant

September 2022 - May 2024

- Head Teaching Assistant of Climate Change Laboratory under the course of Introduction to Climate Change
- creating lesson plans, documenting progress, and overseeing lesson preparations for the undergraduate students
- Assisting the main course Instructor in developing lesson plans for each day by maintaining open lines of communication with them.
- Keeping track of each student's development through regular testing, and keep an eye out for those who might benefit from extra help.
- Offering supplemental aid to students with particular requirements.
- During the spring session (January) of 2024, I served as a TA for the Big Data Analytics course for undergrad and grad students.
- My key responsibilities include teaching:Python programming, Big data analysis, Data visualization, Machine learning, and Deep learning

Department of Earth and Atmospheric Sciences, University of Houston

Houston, TX, USA

Graduate Research Assistant

January 2022 - August 2022

- Worked on a project of Texas Commission on Environmental Quality (TCEQ)
- Regridding the emission files at finer resolution (from 4km to 1km)
- Identifying the periods of elevated offshore ozone concentrations from the Galveston Offshore Ozone Observations (GO3) and the Tracking Aerosol Convection Interactions ExpeRiment/Air Quality (TRACER-AQ) campaigns
- creating .netcdf files for photochemical model preparation
- Reporting monthly progress report to Project Supervisor

Monitoring of Environmental Pollutants and Risk Assessment Lab

Noakhali, Bangladesh

Research Assistant

January 2019 - December 2020

- Data analysis, data curation, data visualization, map preparation, original draft preparation, review and editing, software handling
- Providing assistance to final year undergraduate students in their writing and result analysis
- Assisting in writing research proposal by reviewing existing literature supervised by Lab Head

Education

University of Hosuton (U of H)

Houston, TX, USA

Ph.D. in Atmospheric Science

January 2022 - Continue

- Got graduate tution fellowship, research assistantship, and out of state tuition waiver
- CGPA upto Fall 2023: 3.83
- 1st Year Research Topic: Impact of North American Wildfires on the concentration of particulate matter in Texas
- PhD Research Topic: Studying the associations among climate change, extreme weather events, air pollutants, and public health, i.e., how climate change, heatwaves, ozone, PM2.5, and premature death are interrelated

Noakhali Science and Technology University (NSTU)

Noakhali, Bangladesh

MSc. in Environmental Science

2019-2020

- Got National Science and Technology Fellowship for outstanding graduate research proposal
- CGPA : 3.98 (out of 4.00)
- Masters thesis: Application of machine learning in modeling of particle pollution in an urban environment

Noakhali Science and Technology University (NSTU)

Noakhali, Bangladesh

BSc. in Environmental Science

2012-2018

- Got NSTU departmental merit scholarship throughout the undergraduate study
- CGPA : 3.88 (out of 4.00)
- Honors Project: Downscaling of Global Circulation Models to project climate change in the southern part of Bangladesh

Research Portfolio and Publications

Climate Change Modeling

CLIMATE CHANGE PROJECTION USING STATISTICAL DOWNSCALING MODEL

- **Shahriar SA**, Siddique MAM, Rahman SMA., 2021 Climate change projection using statistical downscaling model over Chittagong Division, Bangladesh. Meteorology and Atmospheric Physics, pp.1-19.

Atmospheric Pollution and Modeling

APPLICATION OF MACHINE LEARNING AND STATISTICAL MODELS FOR ATMOSPHERIC POLLUTION MODELING

- **Shahriar, S.A.**, Choi, Y., Islam, R., Zanganeh Kia, H. and Salman, A.K., Evaluating the Efficacy of Deep Learning and Hybrid Models in Forecasting Pm2. 5 Concentrations in Texas: A 7-Day Predictive Analysis. Available at SSRN 4709966.
- **Shahriar SA**, Kayes I, Hasan K et al., 2021. Potential of ARIMA-ANN, ARIMA-SVM, DT and CatBoost for Atmospheric PM2.5 Forecasting in Bangladesh. Atmosphere, 12(1), p.100
- **Shahriar SA**, Kayes I, Hasan K et al., 2021. Potential of ARIMA-ANN, ARIMA-SVM, DT and CatBoost for Atmospheric PM2.5 Forecasting in Bangladesh. Atmosphere, 12(1), p.100
- **Shahriar SA**, Kayes I, Hasan K et al., 2020. Applicability of machine learning in modeling of atmospheric particle pollution in Bangladesh. Air Quality, Atmosphere and Health, 13(10), pp.1247-1257
- Kayes I, **Shahriar SA,** Hasan K et al., 2019. The relationships between meteorological parameters and air pollutants in an urban environment. Global Journal of Environmental Science and Management, 13(10), pp.265-278
- Basak, J.K., Kim, N.E., **Shahriar, S.A.**, Paudel, B., Moon, B.E. and Kim, H.T., 2022. Applicability of statistical and machine learning–based regression algorithms in modeling of carbon dioxide emission in experimental pig barns. Air quality, Atmosphere and Health, p1-14
- Basak, J.K., Paudel, B., Deb, N.C., Kang, D.Y., Moon, B.E., **Shahriar, S.A.** and Kim, H.T., 2023. Prediction of body composition in growing-finishing pigs using ultrasound based back-fat depth approach and machine learning algorithms. Computers and Electronics in Agriculture, 213, p.108269
- Mitra N, **Shahriar SA**, Lovely N et al., 2020. Assesing energy based CO2 emission and workers' health risk at the shipbreaking industries in Bangladesh. Environments, 7(5), p35.

Biodiversity and Climate System

BIODIVERSITY CONSERVATION AND THE IMPACT OF LAND USE CHANGE

- Das, A.C., **Shahriar, S.A.**, Chowdhury, M.A., Hossain, M.L., Mahmud, S., Tusar, M.K., Ahmed, R. and Salam, M.A., 2023. Assessment of remote sensing-based indices for drought monitoring in the north-western region of Bangladesh. Heliyon, p.e13016
- Mahmud, S., **Shahriar, S.A.**, Hossain, M.L., Islam, R., Das, A.C. and Salam, M.A., 2023. Hybrid model outperformed individual models in predicting droughts in a semi-arid region of Bangladesh.
- Basak, J.K., Paudel, B., Deb, N.C., Kang, D.Y., Kang, M.Y., Roy, S.K., **Shahriar, S.A.** and Kim, H.T., 2024. Modeling ammonia concentration in swine building using biophysical data and machine learning algorithms. Computers and Electronics in Agriculture, 225, p.109269.
- Basak, J.K., Paudel, B., Deb, N.C., Kang, D.Y., Kang, M.Y., Roy, S.K., **Shahriar, S.A.** and Kim, H.T., 2024. Modeling ammonia concentration in swine building using biophysical data and machine learning algorithms. Computers and Electronics in Agriculture, 225, p.109269.
- Basak, J.K., Paudel, B., Deb, N.C., Kang, D.Y., Moon, B.E., **Shahriar, S.A.** and Kim, H.T., 2023. Prediction of body composition in growing-finishing pigs using ultrasound based back-fat depth approach and machine learning algorithms. Computers and Electronics in Agriculture, 213, p.108269.
- Basak, J.K., Paudel, B., **Shahriar, S.A.**, Deb, N.C., Kang, D.Y. and Kim, H.T., 2023. Prediction of drinking water requirements by applying statistical and machine learning models in growing-finishing stage of pigs. Computers and Electronics in Agriculture, 210, p.107934.
- Chowdhury S, **Shahriar SA**, Böhm M et al., 2021 Urban green spaces in Dhaka, Bangladesh, harbour nearly half the country's butterfly diversity. Journal of Urban Ecology, 7(1), p.juab008.
- Chowdhury S, Alam S, Chowdhury SU, Rokonuzzaman M, **Shahriar SA**, Shome AR. and Fuller RA., 2021. Butterflies are weakly protected in a mega-populated country, Bangladesh. Global Ecology and Conservation, 26, p.e01484.
- Ahmed S, Kayes I, **Shahriar SA** et al., 2019. Soil salinity and nutrients pattern along a distance gradient in coastal region. Global Journal of Environmental Science and Management, 6(1), 59-72

Skills and Expertise

Programming and geospatial analysis

SKILLS RELATED TO RESEARCH

- **Programming:** R, Python
- **Geospatial:** ArcGIS, QGIS, ERDAS IMAGINE
- **Expertise:** Data Analysis and visualization ((ggplot2, seaborn, matplotlib), Data Handling (tidyverse, numpy, scipy)

Credentials

Online certifices for universities

- **Data Science Specialization:** Johns Hopkins University, July 2020
- **Spatial Analysis and Satellite Imagery:** University of Toronto, July 2020

Honors & Awards

2023	**EAS Research Grant Award,** 2nd Year PhD Student	*Houston, TX*
2022	**Outsatnding Academic Achievement,** 1st Year PhD Student	*Houston, TX*
2017	**National Fellowship,** National Science and Technology Fellowship by Govt of Bangladesh for outstanding MS thesis	*Dhaka, Bangladesh*
2017	**Merit Scholarship,** Dept of Environmental Science and Disaster Management, NSTU	*Noakhali*

Extracurricular Activity

Coastal Environment Network (CoEN)

Noakhali, Bangladesh

Secretary from 2015-16 and President in 2016-18

2015 - 2018

- Environmental club of NSTU
- Initiated environmental awareness programs as organizer