

Ashfaq Ahmed

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EDUCATION

Brown University

Ph.D., Center for Fluids and Thermal Science

Rhode Island, USA

Sep 2021 – Aug 2026 (Expected)

Bangladesh University of Engineering and Technology

Bachelor of Science in Mechanical Engineering

Dhaka, Bangladesh

Feb 2015 – Apr 2019

RESEARCH INTEREST

Arctic oceanography, marine ecology, remote sensing

SELECTED PUBLICATIONS

Conference Proceedings

Ahmed. A., (2023), *Can We Assess the Impacts of Ekman Transport on Commercial Fishermen in Coastal Areas?*, 2023 Spring EEPS1520: Ocean Circulation and Climate Proceedings, Brown University

Ahmed. A., (2023), *Is Narragansett Bay an ideal laboratory to study tides?*, 2023 Spring EEPS1520: Ocean Circulation and Climate Proceedings, Brown University

Ahmed. A., Wexler, D., Davidson. L., Fox-Kemper, B., Wilhelmus, M., (2022), *Seasonal Evolution of Environmental Indicators in Narragansett Bay*, APS DFD 2022, 75th Annual Meeting, November 20-22, 2022, Indianapolis. (Abstract Submitted)

Rahnuma. M., Hassan, M., Ahmed. N., Ahmed. A., (2021), *Structural Analysis of Continuous I Beam of Steel with Crack Using Finite Element Simulation*, IOP Conference Series: Materials Science and Engineering, Volume 1244, 5th International Conference on Mechanical, Automotive and Aerospace Engineering (ICMAAE 2021), June 21-23, 2021, Kuala Lumpur, Malaysia.

Ahmed. N., Mamun. M., Ahmed. A., (2021), *Vibration Response Analysis of a Structural Metal Mild Steel under the Effect of Crack*, IOP Conference Series: Materials Science and Engineering, Volume 1092, The 2nd International Conference on Innovative Technology, Engineering and Sciences (iCITES 2020), 22nd-23rd December 2020, Pekan Pahang, Malaysia.

Ahmed. N., Ahmed. A., Mamun. M., (2020), *Comperative study of different implicit methods to solve the heat convection-diffusion equation for thin copper plate*, International Joint Conference on Advances in Computational Intelligence, Springer Nature Book Series: Algorithms for Intelligent Systems.

Ahmed. N., Ahmed. A., and S. B. Imran, *Analysis of the Effect of Atherosclerosis with the Changes of Hematocrit: A Computational Study on the Hemodynamics of Carotid Artery*, 2020 2nd International Conference on Advanced Information and Communication Technology (ICAICT), Dhaka, Bangladesh, 2020, pp. 336-341.

Akhtaruzzaman. R., Ahmed. A., Islam. M. Q., Saha, S., Hasan, M. N. (2019), *Numerical modeling of Marangoni convection in the presence of external magnetic field*, American Institute of Physics (AIP) Conference Proceedings: Vol 2121.

Book Chapters

Shahriar. H., Ahmed. A., Ahmed. N., Muntasir. M, (2020), *A Finite Element Analysis of Automobile Leaf Spring*, Innovative Manufacturing, Mechatronics Materials Forum 2020, ISBN: 978-981-15-9504-2, Springer's Lecture Notes in Mechanical Engineering.

Ahmed. N., [Ahmed. A.](#), Mamun, M., (2020), [An Insight into an Eco-friendly Smart City: A Step towards Achieving Urban Sustainability in Dhaka](#), 4th International Conference on Sustainable Development, ISBN: 978-984-34-4755-5, United International University, Dhaka, Bangladesh.

[Ahmed. A.](#), Ahmed. N., Tabassum. M., (2020), [The Increased AQI of Dhaka City and its Partial Solution through Rooftop Gardening: An Urban Perspective](#), 4th International Conference on Sustainable Development, ISBN: 978-984-34-4755-5, United International University, Dhaka, Bangladesh.

TEACHING

Graduate Teaching Assistant

EEPS 0070

Department of Earth, Environmental, and Planetary Sciences, Brown University

Sep 2022 – Dec 2022

- Primary responsibilities included preparing and reviewing quizzes, homework, field trips, and assignment questions for the undergraduates for the **Introduction to Oceanography** class. Managed more than 70 students and regularly interacted with them through email and office hours to solve their research questions.

CONFERENCE PRESENTATION

Seasonal Evolution of Environmental Indicators in Narragansett Bay

75th Annual Meeting of the Division of Fluid Dynamics, Indianapolis, Indiana

Nov 20 – 22, 2022

- Presented my findings on the dominant interannual spatial and temporal patterns in sea surface temperature (SST), chlorophyll-a (Chl), and sea surface salinity (SSS) via an Extended Empirical Orthogonal Function (EEOF) decomposition. Leveraging this framework, I also analyzed the seasonal and decadal variability and covariance of SST, Chl, and SSS within the estuary and provided a possible hint of the evolution of environmental indicators to inform policy-making in Narragansett Bay, Rhode Island, USA.

PROFESSIONAL EXPERIENCE

Sea Ice MURI Program

Office of Naval Research, US Navy

Graduate Research Scientist

Apr 2021 – Present

- Assisting in the current research of the physical modeling and understanding of sea ice dynamics and its relationship to the atmosphere and ocean is of critical importance to twenty-first-century science, impacting human socioeconomic activities in the Arctic and across the Earth with a team of scientists and experts from all over the USA. [Official member profile](#)

IARPC Collaboration

U.S. Federal Government, USA

Committee member

Oct 2021 – Present

- My primary role is to share insights from my ongoing research project in a weekly or bi-weekly meeting about the Arctic environment and sea-ice dynamics in this platform that brings together researchers from 16 agencies, departments, and officers across the U.S. federal government to enhance the Arctic study. [Official member profile](#)

Engineering Graduate Council

Brown University, USA

President

Oct 2021 – Present

- The primary aims are to foster a sense of community among graduate students across departments, to facilitate collective action on graduate student-related issues, and to be a voice for the graduate community within the University and the Providence area. Also provided events and resources to support Brown graduate students' academic and social lives.

Wilhelmus Lab

Brown University, USA

Graduate Student Researcher

Mar 2021 – Present

- Seeking exposure in developing a computational model to analyze the geostrophic current, ice-floe trajectories, and eddy kinetic energy using the sea surface height from the NASA satellite altimetry data. The driving force behind my research is to address the favor of the ocean environment, marine ecology, biodiversity, and future naval relevance. [Lab website](#)

Abartan

Dhaka, Bangladesh

Senior Course Instructor

Jun 2020 – Present

- Primary responsibilities include mentoring the students to prepare compatible CVs, ensuring exceptional quality and standard of their statement of purposes, professionalizing LinkedIn profiles and personal websites, and providing counseling throughout their university and professor selection process for graduate studies abroad. [Website](#)

Shabash Fakibaj-LLC

Associate Director

USA, Germany, Bangladesh

Sep 2019 – Present

- Major responsibilities include educational content creation, collaboration with international universities (i.e., University of Texas at Arlington, University of Northern Iowa), seminar organizations in different parts of Bangladesh to guide the undergraduates to secure scholarships for graduate study abroad as a member of this international educational platform constantly working for a better generation for the Bangladeshi students. (USA License no. 803751949, Trade License no. TRAD/DSCC/258135/2019). [YouTube channel](#), [Facebook page](#).

SELECTED PROJECTS

Wave Propagation | [Google Drive](#)

- A computational analysis was performed to visualize wave propagation in different membranes (primarily circular and rectangular) by solving the classic wave equation using MATLAB programming. Computer simulation shows different modes of solutions. Codes for this project are uploaded in the google drive link.

Double Pipe Heat Exchanger | [Website](#)

- This undergraduate project was completed to design and manufacture a Double Pipe Heat Exchanger (DPHTX). Gained firsthand experiences while constructing a DPHTX using bolts, gaskets, flanges, hydraulic levers, etc.

AWARDS & ACHIEVEMENTS

Student Welfare Funding, **Brown University** (2022-2023)

Graduate Fellowship, **Brown University** (2021-2026)

Dean's Distinguished Fellowship Award, **University of California Riverside, USA** (2021-2022)

Awarded the Dean's list certificate in the fourth year of B.Sc. for achieving an average GPA above 3.75 (2019)

University Stipend Scholarship, **Bangladesh University of Engineering and Technology** (2016-2019)

Board General Scholarship, **Bangladesh University of Engineering and Technology** (2016-2019)

National Education Board Scholarship, Higher Secondary Certificate Examination, Bangladesh (2014)

SOFTWARE EFFICIENCY

Programming: MATLAB, Python 3, Julia

Simulation Software: COMSOL Multiphysics, ANSYS

Computer-aided Design: SOLIDWORKS, AutoCAD

Illustrations: Overleaf Pro, LaTeX, Fiji, Adobe Illustrator, Adobe Photoshop

Database and Spreadsheet: MS Excel, Tecplot 360

Presentation: Keynote, MS PowerPoint

Operating Systems: Linux, MacOS, Windows

RELEVANT COURSEWORK

Major coursework: Fluid Mechanics I-II, Mathematical Models in Geological Science, Mathematical Methods in Engineering and Physics I-II

Minor coursework: Numerical Analysis, Thermodynamics, Solid Mechanics, Machine Design

LANGUAGE PROFICIENCY

Bangla (Native speaker), English, Urdu, Hindi, Spanish

REFERENCES

1. Dr. Monica Martinez Wilhelmus (Ph.D. Advisor)

Assistant Professor,

Center for Fluids and Thermal Sciences

Brown University

Providence, RI 02912

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2. Dr. Baylor Fox-Kemper (Research co-advisor)

Professor,

Dept. of Earth, Environmental and Planetary Sciences

Brown University

Providence, RI 02912

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