Saria Hannan

shannan@iastate.edu | 515-357-9925 | LinkedIn | GitHub | Google Scholar

Objective

To advance Multiphase Fluid Dynamics conducting collaborative research on Bubble Column Reactors with innovative numerical solutions that foster progress in the chemical and pharmaceutical industries, energy sectors, and environmental engineering.

Education

Master of Science (M.Sc) August 2023 - May 2025
Iowa State University Ames, IA
Major: Mechanical Engineering, CGPA: 3.73 out of 4.0

Bachelor of Science (B.Sc) Jan 2017 - August 2021
Military Institute of Science and Technology Dhaka, Bangladesh
Major: Aerospace Engineering, CGPA: 3.90 out of 4.0

Professional Experience

Graduate Research Assistant May 2024 – August 2024
Department of Mechanical Engineering, Iowa State University Ames, IA

- Developed Numerical Simulation of Gas-Liquid Flows in Bubble Columns using OpenFOAM to validate Euler-Euler Multiphase Model for an optimized Doppler optical probe focusing phase detection, bubble velocity and size measurements.
- Collaborated with an experimental team of Grenoble, France to efficiently produce behavior patterns of velocity parameters and probability density functions for both monodisperse and polydisperse bubbles)

Graduate Teaching Assistant August 2023 – Present
Department of Mechanical Engineering, Iowa State University Ames, IA

- Heat Transfer Course - contributed to course improvements, facilitated one-on-one student support, delivered lectures for 103 students, graded assignments, prepared and proctored quizzes.
- Heat Transfer Lab: Led Heat Transfer Lab by conducting experiments, provided guidance on key concepts and problem solving, instructed students on solving critical problems using MATLAB to handle data and generate graphs, tracked students' improvements with feedback sessions.

Visiting Lecturer Jan 2023 – June 2023
Aeronautical Institute of Bangladesh Dhaka, Bangladesh

- Delivered lectures on Aerospace Propulsion, Aircraft Stability and Control Systems.

Production Specialist Jun 2021 – June 2022
Smart Cases Limited Lakemba, New South Wales, Australia

- Sorted products based on the availability of size or colors along with various price tags and generated inbound links of Search Engine Optimization.

Trainee Engineer Dec 2019 – Jan 20220
Smart Cases Limited Kurmitola, Dhaka, Bangladesh

- Trained on MCC and Line Maintenance, Base Maintenance, Engineering Planning and Records, Engineering Services, Component Inspection and Support Shop Maintenance.

Research Interest

- Fluid Particle Flows
- Bubble Column Reactors
- Multiphase Fluid Dynamics
- Computational Fluid Dynamics
- Additive Manufacturing Materials
- Quadrature-based Moment Methods

Technical Skills

Programming Languages	MATLAB, C/C++, Python, R
Data Library	Matplotlib, Numpy, Pandas, HPC cluster
Software and Tools	ANSYS, ANSYS Fluent, SolidWorks, OpenFOAM, Abaqus FEA, Microsoft Office, OpenMP, Unix/Linux, GitHub, LaTeX, VScode, Mathematica

Awards

- Seward, Ratcliffe & Galloway Foundation Mechanical Engineering Fellowship, Iowa State (Fall 2023 – Spring 2024)
- Teaching Excellence Award, Iowa State University (May 2024)
- Research Excellence Award, Iowa State University (May 2024)
- Iowa State College of Engineering Tuition Award (Fall 2023 – Spring 2025)
- Iowa State College of Engineering Resident Tuition Award for Graduate Assistant (Fall 2023 – Spring 2025)
- Iowa State College of Engineering Technology Award for Graduate Assistant (Fall 2023 – Spring 2025)
- Military Institute of Science and Technology Dean's Award (2018-2020)
- Bangladesh Government Scholarships: Dhaka Board - Higher Secondary School (2016) and Secondary School (2014)

Leadership & Involvement

Assistant Secretary Dec 2024 – Present
Mechanical Engineering Graduate Student Organization (MEGSO), ISU Ames, IA

- Encouraged social interactions and assisted in developing professional skillsets of the graduate students
- Organized ME Alumni-Graduate Student Workshop to provide graduate students with insights on transitioning from graduate school to careers in industry, academia, research, and other fields.

Student Member Fall 2023 – Present
Bangladesh Students' Association (BSA), ISU Ames, IA

- Mentored incoming Bangladeshi students at Iowa State with onboarding information and procedures
- Participated in International on-campus annual event "Global Gala" promoting cultural diversity

Senior Advisor Jan 2020 – Mar 2021
MIST Aeronautics & Astronautics Club (MAAC), MIST Dhaka, Bangladesh

- Organized a workshop entitled "Crash Course on SolidWorks" to equip students with fundamental skills for navigating the software and enhancing their technical proficiency. (18 June, 2020)
- Hosted a session entitled "Aviation Engineering with Madip Kumar Joshi" to connect students with industry professionals and fostering discussions on emerging aerospace trends. (21 Aug, 2020)
- Arranged a workshop entitled "Exploring Aeronautics with Hassan Saad Ifti" to offer students valuable insight into real-world engineering applications. (25 July, 2020)

Executive Member January 2019 – December 2019
MIST Robotics Club (MISTRC), MIST Dhaka, Bangladesh

- Helped conduct the largest Robotic competition of the school.
- Utilized analytical reasoning to evaluate the most deserving winner of the school year.

Certified Courses

- Programming for everybody: Getting started with python (University of Michigan), May 2020, Coursera
- Initiating & Planning Projects (University of California), June 2020, Coursera
- Basic Elements of Design: Design Principles & Software Overview (University of Colorado), June 2020, Coursera
- Simscale: Finite Element Analysis (FEA) of Automotive Systems, June 2020, (Military Institute of Science and Ttechnology)
- Adobe Illustrator (Mastering the Fundamentals): skills in Graphic Design Application including vector graphics, scaling image maintaining quality, May 2020, Bohubrihi E-learning platform.

Posters & Conferences

- **Poster Presentation** Validation of Well-posed Euler-Euler Models for Gas-liquid Flows in Bubble Column
  Center for Multiphase Flow Research and Education (CoMFRE), College of Engineering, Iowa State (Oct 21, 2024)
- **Oral Presentation** Validation of Well-posed Euler-Euler Models for Gas-liquid Flows in Bubble Column
  77th Annual Meeting of the Division of Fluid Dynamics, APS, Salt Lake City, UT (Nov 24-26, 2024)
- **Oral Presentation** Validation of volume fraction profiles and velocity PDFs in a pilot scale bubble column
  12th International Conference on Multiphase Flows (ICMF), Toulouse, France (May 12-16, 2025)