

Syed Angkan Haider

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EDUCATION

Doctor of Philosophy (PhD) in Mechanical Engineering (ME) [Jan.2021-present]
University of Illinois at Urbana-Champaign (UIUC)

GPA: 4.00/4.00

(Coursework: Thermal Systems, Design of Thermal Systems, Intermediate Heat Transfer)

Bachelor of Science (BS) in Mechanical Engineering (ME) [Feb.2015-Apr.2019]
Bangladesh University of Engineering and Technology (BUET)

GPA: 3.83/4.00, Class rank: 6/210

RESEARCH EXPERIENCE & ACTIVITIES

- **Graduate Research Assistant, Air Conditioning and Refrigeration Center (ACRC)**, Department of Mechanical Science and Engineering (MechSE), UIUC. [Jan.2021-present]
ACRC Project #473: Oil-Circulation-Rate (OCR) Measurement Methods for Miscible and Immiscible Oils with Focus on Low-GWP Refrigerants
(Advisor: Dr. Stefan Elbel, Research Assistant Professor, MechSE, UIUC)
Project deliverables:
 - o Understanding OCR measurements justified by industry trend to move towards low-OCR compressors in many applications
 - o Literature review on state-of-the art OCR measurement techniques (in-situ and sampling)
 - o Exploration of key parameters influencing oil sampling techniques (cylinder size, shape, orientation, etc.)
 - o Experimental evaluation of OCR in hot gas and full cycle system with various low-GWP refrigerants (pure and blends), oil types, viscosities, and operating temperatures
 - o Development of oil saturation correction for flow meter-based method
- **Undergraduate Research Assistant** (for thesis), **Macro-to-Micro scale Fluids Engineering Lab (MμFEL)**, Department of ME, BUET. Work overview - [Apr.2018-Apr.2019]
 - o Study of subsonic and supersonic flows over a rotating circular cylinder
 - o Analysis of rarefied flows using the direct simulation Monte Carlo (DSMC) method and continuum flows using CFD techniques
 - o Using *dsmcFoam* and ANSYS-Fluent solvers for the numerical solution of rarefied and continuum flows respectively
 - o Post-processing of raw data using ParaView and Tecplot 360
- **Mentor**, Fluid Mechanics Sub-group, **Multiscale Mechanical Modeling and Research Network (MMMRN)**, BUET. Work overview - [Oct.2018-Apr.2019]
 - o Organizing workshops on basics and applications of fluid mechanics, paper writing, modeling and simulations using ANSYS Fluent
 - o Discussing the use of different modern numerical techniques to solve fluid mechanics problems

PROFESSIONAL EXPERIENCES

- **Graduate Teaching Assistant**, Department of Mechanical Science and Engineering (MechSE), UIUC. [Jan.2021-present]
Courses Instructed: Fundamentals of Fluid Dynamics (Lab) (Spring 2021, Fall 2021)
- **Lecturer**, Department of Textile Engineering, Daffodil International University (DIU), Bangladesh. [Oct.2019-Apr.2020]
Courses Instructed: Engineering Materials, Manufacturing Engineering, Manufacturing Engineering Lab, Engineering Drawing
- **Industrial trainee**, Kohinoor Chemical Company Limited, Tejgaon, Dhaka, Bangladesh. [Sep.2018-Oct.2018]

SKILLS

- Languages : C, C++, Python, Arduino
- Modeling, Simulation & Analysis Tools : EES, OpenFOAM, ANSYS-Fluent, MATLAB, HTRI Xchanger Suite
- Processing & Visualization Tools : Tecplot 360, ParaView
- Design and Drawing Tools : SolidWorks, AutoCAD
- Documentation & Presentation Application : Microsoft Office Suite, LaTeX

PUBLICATIONS

- **Haider, S.A.**, Hossain, M.A.A., Hasan, A.B.M.T., “**Direct Simulation Monte Carlo Analysis of Subsonic Flow over a Rotating Circular Cylinder in Rarefied Conditions**”, 13th International Conference on Mechanical Engineering, ICME2019, Dec.2019, Dhaka, Bangladesh. (AIP Conference Proceedings 2324, 040014 (2021))
- **Haider, S.A.**, Joy, T.I., Akanda, M.F.R., “**Numerical Study on Aero-Acoustic Behavior for Flow over a Supercritical Airfoil at Low Reynolds Number**”, 5th International Conference on Mechanical, Industrial and Energy Engineering, ICMIEE2018, Dec.2018, Khulna, Bangladesh.
- Arka, A.M., Mridha, R.H., Shafqat, R., **Haider, S.A.**, Haque, F., Morshed, A.K.M.M., “**Design and Multivariable Constrained Optimization of Shell and Tube Heat Exchangers**”, 8th BSME International Conference on Thermal Engineering, ICTE2018, Dec.2018, Dhaka, Bangladesh.
- **Haider, S.A.**, Tahmid, S., “**Study of Shockwave with Supersonic Compressible Flow over an Inclined Flat Plate**”, 3rd International Conference on Mechanical, Industrial and Materials Engineering, ICMIME2017, Dec.2017, Rajshahi, Bangladesh.

UNDERGRADUATE THESIS

Subsonic Flow over a Rotating Circular Cylinder in Rarefied Conditions using Molecular Approach [Apr.2018-Apr.2019]

(Advisor: Dr. A. B. M. Toufique Hasan, Professor, ME, BUET)

UNDERGRADUATE PROJECTS

- **Thermal and Mechanical Design of a Shell-and-Tube Heat Exchanger** [Sep.2017-Mar.2018]
(Advisor: Dr. Md. Ashiqur Rahman, Associate Professor, ME, BUET)
- **Electromechanical Design of an Automatic “Bhapa Pitha” (Traditional Bengali Cake) Maker** [Feb.2017-Sep.2017]
(Advisor: Dr. A. K. M. Monjur Morshed, Professor, ME, BUET)

FELLOWSHIPS & ACADEMIC AWARDS

- **Kritzer Fellowship**, MechSE, UIUC (Jan. 2021-Dec. 2021)
- **Dean’s List Scholarship**, Faculty of Mechanical Engineering, BUET (Jan.2015, Jul.2017 sessions).
- **University Merit Scholarship**, BUET (Jan.2015, Jul.2015, Jan.2017, Jul.2017, Jan.2018 sessions).
- **Education Board Technical Scholarship**, BUET (2015-2019).