# Meftah Uddin

**Contact:** Columbia, MO, Cell**:** 573 639 4447 **E-mail:** meftah11buet@gmail.com **LinkedIn:** meftah-uddin-972a78125/
**Weblinks:** GitHub, Google Scholar

## EDUCATION

PhD Mechanical and Aerospace Engineering, University of Missouri-Columbia, CGPA: 3.92 **Aug 2021- present**
MS Mechanical and Aerospace Engineering, University of Missouri-Columbia, CGPA: 3.88 **July 2024**
BS Mechanical Engineering, Bangladesh University of Engineering & Technology (BUET), CGPA: 3.54 **Feb 2017**

**Skills:** Building Energy Simulation, Design of Experiment, Statistical Analysis (ANOVA, Regression, Optimization etc.), Machine Learning, Energy Analysis, Time Series Analysis, Computational Fluid Dynamics (CFD).

## EXPERIENCE

**Graduate Teaching Assistant, University of Missouri-Columbia** **Jan 2023 - present**

- To instruct and evaluate MAE 3800 Instrumentation and Measurement lab.

Key Experimental Devices: Oscilloscope, Digital Multimeter, Function Generator, Operational Amplifier, etc.

**Energy Auditor (Intern), Midwest IAC, Columbia, Missouri** **Sep 2022 - present**

- To visit factory premises and collect data related to electricity, water & gas consumption; to measure HVAC parameters, lighting, and amount of wastewater and any other utilities.
- To offer energy savings recommendations, provision to use renewable energy with associated probable project costs and payback periods (ASHRAE II).

**Graduate Research Assistant, University of Missouri-Columbia** **Aug 2021 - present**

- HVAC energy analysis and model development using Energy Plus software and CFD analysis.
- Machine Learning and Deep Learning applications for time series forecasting.
- Numerical analysis to describe the melting phenomena of the solid-liquid phase change materials (PCM) and experimental validation of the model.

**Assistant Engineer, Sirajganj 225×3 MW CCPP (NWPGCL), Bangladesh** **Jul 2018 - Aug 2021**

Activity performed:

- Maintenance & Troubleshooting of Gas Turbine (Siemens SGT5-2000E) & auxiliaries; Steam Turbine & auxiliaries; HRSG & auxiliaries; Gas Distribution System and Fuel Oil (HSD) system; Compressed Air System & Nitrogen Generation System; Water Treatment and Distribution Plant.
- Procurement of required spares, tools & consumables and assist to prepare & execute Annual Procurement Plan

Accomplishment:

- Major Overhauling of the Steam Turbine (Leak test of HRSG, X-ray and Dye penetration test of turbine rotor and blades)
- Minor Inspection of Gas Turbine (Borescope inspection turbine and compressor, and Dye penetration test of combustion chamber)

**Executive Engineer, Square Pharmaceuticals Ltd., Dhaka, Bangladesh** **Oct 2017- Jun 2018**

Activity performed:

- Maintenance and troubleshooting of HFO Power Plant, HVAC system, Water Treatment Plant, Boilers, Compressed Air System, Nitrogen Generation Plant
- Responsible for writing and updating Standard Operating Procedure; scheduling, planning using ERP (SAP) Software.

Project Completion:

- Prepared 2D drawing and executed Blow Fill Seal (BFS) line modification works.
- 2D Drawing and associated civil works for the installation of Air Compressor and auxiliaries.
- Responsible for monitoring HVAC design, Cooling Load and Air Flow rate calculation for Nasal Spray production line installation.

## TECHNICAL PROFICIENCIES

**Programming Language:** Python, MATLAB, R
**HVAC Energy Simulation:** Ladybug and Honeybee with Open Studio (Energy Plus), BEopt.
**Drawing and Design Tool:** SOLIDWORKS, AutoCAD 2D, Rhino, Revit
**CFD Simulation:** ANSYS Fluent
**Data Analysis & Visualization:** Excel, Power BI, R and Python.

## MASTER'S THESIS

**Smart strategy for building energy efficiency: Integrating occupancy-based HVAC control and machine learning prediction.**

- Implementing occupancy-based control (OBC) for ventilation rate and temperature setpoints/setback can save up to 26% energy consumption in campus building.
- Neural network based timeseries forecast facilitate demand prediction and tuning HVAC schedules.

## PROJECT EXPERIENCE

**Statistical Analysis of building energy use intensity (EUI)**

- The energy use intensity (EUI) between commercial and residential building among five cities in the United States are statistically compared using dataset from BPD website.

**Net Zero Building Design**

- To design a baseline residential building model complying with ASHRAE Standard 90.1.2016 using perspective path.
- Addition of renewable source to the baseline model to ensure NetZero building.

**Numerical study on the effect of phase change materials (PCM) in thermal management of building**

- The effect of PCM in thermal insulation of building walls and location of PCM layer studied using ANSYS Fluent.

**Numerical study on solidification/melting of phase change material in thermal management system.**

- To evaluate a numerical model of melting of gallium as phase change material (PCM) using ANSYS fluent with experimental study.
- To understand the usability of PCM as a medium for thermal storage and temperature control.

**Experimentally calculate the major loss of UPVC pipe**

- To build the setup to calculate the major loss of UPVC pipe, measure the weight of water using the bucket method and compare the results with numerical study.

## PUBLICATIONS

- Uddin, M., Virk, A. S., and Park, C. (August 29, 2023). "Natural Convection in the Melting of Phase Change Materials in a Cylindrical Thermal Energy Storage System: Effects of Flow Arrangements of Heat Transfer Fluid and Associated Thermal Boundary Conditions." ASME. J. Thermal Sci. Eng. Appl. November 2023;15(11): 111010. https://doi.org/10.1115/1.4063045
- JB Kim, F Wang, … Uddin, M. "Digital Twin Framework for Smart Campus to Reduce Greenhouse Gas Emission." Accepted, 2023 IEEE Smart World Congress (SWC) https://doi.org/10.1109/SWC57546.2023.10448799.

## AWARD

- First Prize in poster presentation, Engineering & Science, Show Me Research Week **Apr 2024**

## CAMPUS INVOLVEMENT

President, Bangladesh Student Association (BSA), University of Missouri **Sep 2023 - present**

Department Representative, Graduate Professional Council (GPC), University of Missouri **Aug 2023 – Sep 2024**