KHALED MOSHARRAF MUKUT
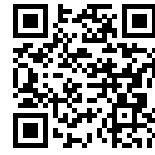
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🌐 kmmukut.github.io

Education

Ph.D in Mechanical Engineering (Marquette University)	**Aug 2019 – May 2023 (Expected)**
Dissertation: Fundamental Investigation of Soot Formation, Evolution and Morphology	*Milwaukee, WI*
MS in Mechanical Engineering (Marquette University)	**Aug 2017 – May 2019**
Thesis: Effect of Radiation and EGR on Pollutant Formation in Spray Combustion Systems	*Milwaukee, WI*

Relevant Coursework

- Transport Phenomenon
- Thermodynamics
- CFD
- Heat and Mass Transfer
- Adv. Algorithm
- Adv. Machine Learning
- Air Quality Engineering
- Distributed Computing

Honors and Awards

Awarded Richard W. Jobling Distinguished Research Fellowship | *Marquette University*	**Feb 2023**
Outstanding Research Assistant Award | *Marquette University*	**Apr 2021**
Awarded Dean's List Scholarship | *Bangladesh University of Engineering & Technology*	**Nov 2011**

Experience

Marquette University	**Aug 2017 – Present**
Graduate Assistant	*Milwaukee, WI*

- Led significant research at the Computational Combustion Lab (CCL) during my MS and Ph.D., with findings presented at various conferences and published in multiple journals. Demonstrated proficiency in a diverse range of computational skills, including CFD and molecular modeling software, high-performance computing, and several programming languages.
- Served as an instructor and grader for a variety of undergraduate Mechanical Engineering courses, including Heat Transfer, Fluid Mechanics, Dynamics of Machinery, Thermodynamics, and Measurement and Material Properties Lab.
- Mentored fellow graduate students in the use of essential tools for research and personal development, including `Git`, `Linux`, `Python`, and LaTeX.

Bangladesh University of Engineering & Technology	**Mar 2016 – Aug 2017**
Graduate Assistant	*Dhaka, BD*

- Guided a group of seven undergraduate seniors through their thesis work on linear and explosive heating in nano-confinement using molecular dynamics.
- Supervised a separate group of undergraduate seniors on their thesis work, focusing on the numerical modeling of a thermally stratified co-axial jet using `ANSYS:FLUENT`.

Technical Skills

Languages: Python, C/C++, `MATLAB`, `FORTRAN`, HTML, Bash
Tools: VS Code, PyCharm, Autocad, SolidWorks, Tecplot, Paraview, Tableau
Technologies/Frameworks: Linux, GitHub
Simulation Tools: OpenFoam, LAMMPS, ANSYS:FLUENT, COMSOL, CONVERGE CFD

Other Professional Activities/Leadership / Extracurricular

Entangled Air | *An exhibition bringing together the art of TOMÁS SARACENO and my research at CCL*	**Spring 2022**

- A series of social outreach raising awareness about air quality.
- Developed artwork while fostering community engagement and advocating the importance of clean air.

Python Summer School | *A week-long python bootcamp for high school studnets*	**Summer 2023**

- Guided 15 high school students to create their own air quality data visualizations using Python.

Bangladesh Student Organization at Marquette University (BSAMU)	**Jun 2021 – May 2023**
President	*Marquette University*

- Organized a number of cultural events and social services to bring the community together.
- Managed executive board of 10 members and ran bi-weekly meetings to oversee progress in essential parts of the organization.

Publications

- K.M. Mukut, S.P. Roy & E. Goudeli.(2022) Molecular arrangement and fringe identification and analysis from molecular dynamics (MAFIA-MD): A tool for analyzing the molecular structures formed during reactive molecular dynamics simulation of hydrocarbons. Computer Physics Communication, 276, DOI:10.1016/j.cpc.2022.108325

- A. Sharma, K.M. Mukut, S.P. Roy & E. Goudeli (2021). The coalescence of incipient soot clusters. Carbon, 180, 215-225, DOI:10.1016/j.carbon.2021.04.065

- K.M. Mukut, S.P. Roy (2020) Effect of O2 concentration in ambient mixture and multiphase radiation on pollutant formation in ECN spray-A, Combustion Theory and Modelling, 24:3, 549-572, DOI: 10.1080/13647830.2020.1721561

- For full list of publications click **HERE** or **SCAN**