

MD MUHTASIM BILLAH

PhD Candidate | Data Science | Machine Learning | Statistics | Stochastic Modeling

Personal Website: mdmuhtasimbillah.netlify.app | Google Scholar ID: scholar.google.com/mmb

Contact Info: @ mdmuhtasim.billah@wsu.edu | 509-330-6287

[linkedin.com/in/mmb039](https://www.linkedin.com/in/mmb039)

[kaggle.com/mdmuhtasimbillah](https://www.kaggle.com/mdmuhtasimbillah)

github.com/mmbillah

medium.com/@mmbillah

WORK EXPERIENCE

Graduate Research/Teaching Assistant

Washington State University

Aug 2018 – Ongoing

Pullman, WA

- Used finite volume method (FVM) for solving inverse heat transfer problems using the Bayesian Inference machine learning algorithm.
- Developed and further improved a preexisting probabilistic model based on Metropolis Monte Carlo method written in C++ and Fortran.
- Utilized the stochastic model for studying the key parameters of transcytosis for drug delivery through blood brain barrier (BBB) as an aid for neurodegenerative diseases such as Alzheimer's and Parkinson's.
- Studied design parameters and relevant characteristic properties for manufacturing functional nanoparticle for drug delivery to the brain.

DATA SCIENCE PROJECTS

- Multilabel Classification of Drug from Mechanism of Action (MoA) [Link](#)
 - Employed several DNN architectures i.e. FFNN, ResNet, LSTM etc.
 - Performed multilabel stratified k-fold cross validation for resampling.
 - Created model ensemble to further minimize the cross entropy loss.
 - Acquired bronze medal in associated Kaggle competition (2020). [Link](#)
- End-to-end Recommender Systems for Amazon Products [Link](#)
 - Used Apache Spark to handle large Amazon datasets (233M reviews).
 - Wrote Python and SQL scripts to parse and import data into MySQL.
 - Applied multiple memory based (both user and item based) and model based (SVD, ALS matrix factorization) collaborative filtering methods.
 - Harnessed fast cloud computing environment on AWS EC2 (Linux).
- Cancer Classification from Gene Expression Monitoring [Link](#)
 - Applied k-means clustering on gene expression (microarrays) data.
 - Performed dimensionality reduction (PCA) on 7,123 human genes.
- Socioeconomic Factors vs Female Employment in Bangladesh [Link](#)
 - Processed World Bank data on Bangladesh spanning over 30 years.
 - Performed regression analysis on the trend of female employment.

PUBLICATIONS

Journal Articles

- Al Khan, MM Billah, C Ying, J Liu, P Dutta, *Bayesian Method for Parameter Estimation in Transient Heat Transfer Problem*, International Journal of Heat and Mass Transfer (2020) 166, 120746. [Link](#)
- MM Billah, H. Deng, P. Dutta, J. Liu, *Receptor Mediated Endocytosis with and without Clathrin Dependency: Key Parameters Study*, Nanoscale (To be submitted).

Conference Proceedings

- MM Billah, H. Deng, P. Dutta, J. Liu, *Investigation of the Key Parameters Impacting the Receptor Dependent Clathrin-mediated Endocytosis through Stochastic Modeling and Simulations* American Physical Society, (2019) L32-003. [Link](#)

EDUCATION

Ph.D. Mechanical Engg. GPA: 3.94/4.00
Washington State University Aug 2022

Multiscale Modeling, Stochastic (Monte Carlo) Simulations

M.S. Statistics GPA: 4.00/4.00
Washington State University Jan 2022

Relational Database, Machine Learning, Statistical Computing

B.S. Mechanical Engg. GPA: 3.55/4.00
BGD U. of Engg. and Tech. Feb 2017

TECHNICAL SKILLS

Programming: Python R SQL C++
MATLAB SAS \LaTeX Fortran

Data Science/Machine Learning: NumPy
Pandas Scikit-Learn TensorFlow/Keras
Matplotlib Plotly Seaborn dplyr
tidyr tidyverse caret quanteda
ggplot2 git tableau

Big Data: MySQL PySpark XML
RDF Graph AWS/EC2

AWARDS/HONORS

- Bronze medal (top 9%), Kaggle mechanism of action (MoA) detection competition, 2020.
- Best project (1st of 15 teams) award, CptS 415: Big Data, WSU, Fall 2020.
- Dean's List Scholarship, Faculty of Mechanical Engineering, BUET 2017.
- University Merit Scholarship, BUET 2016.
- Dean's List Scholarship, Faculty of Mechanical Engineering, BUET 2016.

CERTIFICATES

- Deep Learning Specialization (Coursera) [Link](#)
- Machine Learning (Coursera) [Link](#)
- Python Programming (DataCamp) [Link](#)
- Data Scientist with Python (Ongoing)