

MD MUHTASIM BILLAH

Data Science | Machine Learning | Statistics | Stochastic Modeling

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github.com/mmbillah

medium.com/@mmbillah

EXPERIENCE

Research Assistant

Washington State University

Jan 2020 – Ongoing

Pullman, WA

- Developed and further improved a preexisting probabilistic model based on Monte Carlo method written in C++ and Fortran programming language.
- Utilized the stochastic model for studying key parameters 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.
- Used finite volume method (FVM) for solving inverse heat transfer problem using Bayesian Inference technique.

DATA SCIENCE PROJECTS

- Multilabel Classification of Drug from their Mechanism of Action (MoA)
 - 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 the associated Kaggle competition (2020).
- End-to-end Recommender Systems for Amazon Products
 - Applied multiple memory based (both user and item based) and model based (SVD, ALS matrix factorization) collaborative filtering methods.
 - Used Apache Spark to handle large Amazon datasets (233M reviews).
 - Harnessed fast cloud computing environment on AWS EC2 (Linux).
- Cancer Classification from Gene Expression Monitoring
 - Applied k-means clustering on gene expression (microarrays) data.
 - Performed dimensionality reduction (PCA) on 7,123 human genes.
- Influence of Socioeconomic Factors on Female Employment in Bangladesh
 - 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.
- MM Billah**, H. Deng, P. Dutta, J. Liu, *Receptor Mediated Endocytosis with and without Clathrin Dependency: Key Parameters Study*, Nanoscale (Under review).

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.

EDUCATION

Ph.D. Mechanical Engg. GPA: 3.93/4.00

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.

Feb 2017

Bangladesh University of Engg. and Tech.

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/RECOGNITIONS

- Best project (1st among 15 teams), 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)
- Machine Learning (Coursera)
- Python Programming (DataCamp)
- Data Scientist with Python (Ongoing)