# MD MUHTASIM BILLAH

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M medium.com/@mmbillah

#### WORK EXPERIENCE

# Graduate Research/Teaching Assistant Washington State University

## Aug 2018 - Ongoing

Pullman, WA

- Developed and further improved a preexisting probabilistic model based on Monte Carlo method written in C++ and Fortran.
- 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
  - \* 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
  - \* 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 (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.

#### **EDUCATION**

Multiscale Modeling, Stochastic (Monte Carlo) Simulations

M.S. Statistics

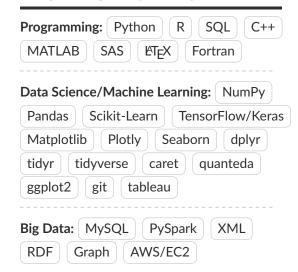
GPA: 4.00/4.00

Washington State University

苗 Jan 2022

Relational Database, Machine Learning, Statistical Computing

## **TECHNICAL SKILLS**



#### 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)
- Machine Learning (Coursera)
- Python Programming (DataCamp)
- Data Scientist with Python (Ongoing)