# MD MUHTASIM BILLAH

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k kaggle.com/mdmuhtasimbillah

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#### WORK EXPERIENCE

# Graduate Researcher Washington State University

Aug 2018 - Ongoing

github.com/mmbillah

Pullman, WA

- Implemented finite volume method (FVM) for solving inverse heat transfer problems using Bayesian Inference machine learning technique.
- Developed and further improved a preexisting probabilistic model based on Metropolis Monte Carlo algorithm written in C++ and Fortran for studying bio/nanoparticle transport across blood-brain barrier (BBB).
- Studied complex polymer/solvent/nonsolvent systems for industrial applications using atomistic models and molecular dynamics simulations.

## **DATA SCIENCE PROJECTS**

- Sentiment Analysis of COVID-19 Vaccines Based on Twitter Data. 🔗
  - \* Mined 42,478 unique tweets filtered by few predetermined keywords.
  - \* Processed tweet metadata followed by stemming and lemmatization.
  - Performed sentiment analysis to find positive/negative/neutral tweets.
  - \* I chromica scriminant analysis to find positive/fregative/fredatal tweets.
  - Visualized findings with geolocation filters in Tableau dashboard.
- Predictive Modeling of Trading Decisions for Global Stock Exchange.
   \* Utilized real market data consisting 2.39M tradings and 130 features.
  - \* Othized real market data consisting 2.37M tradings and 130 realures
  - $\ast\,$  Trained multiple FFNN models to minimize loss and maximize AUC.
  - \* Achieved high utility score (weighted ROI) testing on future data.
  - st Received bronze medal in the associated Kaggle competition (2021).
- Multilabel Classification of Drug from Mechanism of Action (MoA)
  - \* Employed several DNN architectures i.e. FFNN, ResNet and LSTM.
  - Performed multilabel stratified k-fold cross validation for resampling.
  - Created model ensemble to further minimize the cross entropy loss.
  - st Acquired bronze medal in the associated Kaggle competition (2020).
- - \* 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 & Clustering from Gene Expression Monitoring
  - st Performed PCA on 7,123 human genes (found from microarrays data).
  - \* 85% of the total variance was found to be explained by top 50 genes.
  - \* Applied k-means clustering for analyzing cancer classes AML and ALL.
  - \* Employed Elbow and Silhouette Score method for the selection of k.
- Female Employment Against Socioeconomic Factors in Bangladesh 🔗
  - \* Processed World Bank data on Bangladesh spanning over 30 years.
  - \* Utilized statistical testing and diagnostic plots for checking model assumptions, possible outliers, multicollinearity and autocorrelations.
  - \* Multivariate regression achieved an adjusted R-squared value of 0.99.

#### **RELATED COURSEWORK**

Big Data and Cloud Computing Data Mining and Analysis

Neural Networks Applied Linear Models Statistical Theory

Genomic Data Analysis Design and Analysis of Experiments

#### **EDUCATION**

@ mdmuhtasim.billah@wsu.edu

Multiscale probabilistic (Monte Carlo) modeling, molecular dynamics simulations

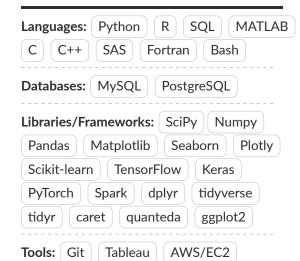
M.S. Statistics

Washington State University 

iii Jan 2022

ETL pipeline, time series, forecasting and predictive modeling, statistical computing

# **TECHNICAL SKILLS**



## AWARDS/HONORS

- Received Kaggle Competition Expert (ranked within the top 1%) badge, 2021.
- Bronze medal (top 8%), Kaggle Jane Street market prediction competition, 2021.
- 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.

#### **CERTIFICATIONS**

- Python Data Scientist (DataCamp) 🔗
- Deep Learning Specialist (deeplearning.ai) 🔗
- Machine Learning (Stanford University)