

# Asadullah Hill Galib

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## Education

### Ph.D. in Computer Science and Engineering

August 2020 - Present

Michigan State University, MI, USA

Advisor: [Dr. Pang-Ning Tan](#), Domain: Deep Learning, Self-supervised Learning, Time Series, Extreme Values, Seq2Seq

### M.Sc. in Software Engineering

January 2019 - December 2020

University of Dhaka, Dhaka, Bangladesh

Thesis: Significant Features Analysis For Android Malware Detection Using Machine Learning Techniques

### B.Sc. in Software Engineering

January 2015 - December 2018

University of Dhaka, Dhaka, Bangladesh

## Technical Skills (\* PROFICIENT)

**Programming Languages:** Python\*, Java\*, C\*, C++, PHP, JavaScript, Assembly

**AI & Machine Learning:** PyTorch\*, Lightning\*, SK-learn\*, Pandas\*, NumPy\*, Matplotlib\*, Anaconda\*, MATLAB, Keras

**Miscellaneous:** Android\*, GCP\*, MySQL, Oracle, SQLite, jQuery, React Native, Laravel, Selenium, Git\*, Agile, MVC, SRS\*

## Experience

### Researcher (Internship), [Frontier Development Lab \(FDL\) 2022](#) by [NASA](#) and the [SETI Institute](#) June 2022 - August 2022

- Collaborated with a multi-disciplinary team on the NASA challenge: Seismic Insight from Geomagnetic and Ionospheric Data.
- Carried out a statistical analysis that shows promising links between major earthquakes and ionospheric perturbations.
- Developed the first machine learning-ready dataset and statistical tool comprising spatiotemporally varying precursory data sources for studying pre-seismic and post-seismic disturbances.
- Built machine learning models for forecasting and detecting earthquakes from heterogeneous multivariate time series data.
- Developed a probabilistic model to learn the spatial variability of ionospheric observations around seismic locations.
- Research outcomes: 3 AGU abstracts, 1 paper in NeurIPS 2022 workshop - ICBINB, 1 technical memo, and 1 NASA NTR.

### Graduate Research Assistant, [Michigan State University \(CSE\)](#)

January 2022 - Present

- Working in the NSF project: [Prediction and Characterization of Extreme Events in Spatio-Temporal Data](#) at [DMiner Lab](#).
- Developing novel deep learning algorithms addressing extreme events within spatio-temporal and time series data.

### Graduate Teaching Assistant, [Michigan State University \(CSE\)](#)

August 2020 - December 2021

- Lead classes and labs of 260+ students in *CSE 102: Algorithmic Thinking and Programming (Python)*

### Software Developer & Executive Assistant (Internship), [Brain Station 23](#)

January 2018 - June 2018

- Developed from scratch and maintained a web application and a mobile application, using Laravel Framework, PHP, MySQL, React-Native, Redux-Saga, Android Studio, Postman and proper version-controlling (Git, SourceTree).
- Analyzed requirement specification and design of an existing system for re-engineering. Analyzed two e-commerce frameworks.

## Selected Publications (FULL LIST WITH DETAILS)

- **Galib, A. H.**, McDonald, A., Wilson, T., Luo, L., & Tan, P. N. (2022, Jul.). DeepExtrema: A Deep Learning Approach for Forecasting Block Maxima in Time Series Data. In **IJCAI 2022** (15% acceptance rate).
- Wilson, T., McDonald, A., **Galib, A. H.**, Luo, L., & Tan, P. N. (2022, Aug.). Beyond Point Prediction: Capturing Zero-Inflated & Heavy-Tailed Spatiotemporal Data with Deep Extreme Mixture Models. In **KDD 2022** (14.99% acceptance rate).
- Cullen\*, L., **Galib\***, **A. H.**, Smith\*, A. W., Varshney\*, D., Brown, E., Chi, P., ... & Svoboda, F. (2022, Dec.). Can We Forecast And Detect Earthquakes From Heterogeneous Multivariate Time Series Data? In **ICBINB@ NeurIPS 2022**.
- **Galib, A. H.**, & Hossain, B. M. (2020, Jul.). Significant API Calls in Android Malware Detection (Using Feature Selection Techniques and Correlation Based Feature Elimination). (**SEKE 2020**) (41% acceptance rate).

## Academic and Research Projects (FULL LIST WITH DETAILS)

- **Predicting GitHub Issues Lifetime using Machine Learning and Topic Modeling (LDA):** It outperforms the previous approach with a high precision and f1- measure. Also, it extracts distinguishable and comprehensible topics from issues. [PDF](#).
- **Pre-birth Factors in the Early Assessment of Child Mortality using Machine Learning Techniques:** It achieves an AUC score of 0.947 which outperforms the clinical standards. Also, it assesses the relative importance of the factors. [PDF](#).
- **Optimizing Search Space in Code Smells Detection using a Novel Metric:** Significantly reducing search space (i.e., 93% to 21%) using a novel metric called - NCPC, while maintaining the performance of code smells detection. [PDF](#).
- **Analyzing co-authorship network: Centrality Measure, Link Prediction, and Community Detection:** It analyzes a network of co-authorship relations, predicts missing link with 64% accuracy and detect community using the network modularity algorithm.