MOLLA HAFIZUR RAHMAN

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EDUCATION

Doctor of Philosophy in Mechanical Engineering   **August 2017 - 2022 (expected)**
University of Arkansas, Fayetteville
Research area: Sequential decision-making, Artificial intelligence in design, Human-computer interaction in design
Courses: Probability Theory, Machine Learning, Deep Learning, Decision-Making

Bachelor of Science in Naval Architecture & Marine Engineering   **May 2010 - September 2015**
Bangladesh University of Engineering and Technology (BUET)
Major: Design
Courses: Probability, Linear Algebra, Numerical method, Mechanics of Materials, Machine Design

SKILLS SUMMARY

Programming language	C++, Python, R, Matlab, HTML, SQL
Framework	NumPy, SciPy, Pandas, Scikit-learn, TensorFlow, Keras, PyTorch
Computer aided design/engineering	AutoCAD, Solidwork, Rhino, 3ds Max, Photoshop, Illustrator
Analysis Software	ANSYS, Maxsurf, Abaqus
Other	LaTeX, Microsoft Project and Microsoft Office Suit, Mac OS

WORK EXPERIENCE

Gradate Research Assistant   **August 2017 - Present**
Department of Mechanical Engineering, University of Arknsas, Fayetteville

- Conducted system design experiments and collected user behavioral data through a CAD system. Extracted, manipulated and cleaned data for statistical analysis.
- Developed a novel method of identifying sequential behavior by implementing Markov Model and different clustering algorithms including K-means, Hierarchical Agglomerative, and Network-based approach.
- Implemented deep learning models such as Feed-forward Neural Network (FNN), Recurrent Neural Network (RNN) (especially long short term memory unit/LSTM) in order to predict users' future actions. Compare these models with the traditional sequential models (i.e., Markov Model and Hidden Markov Model).
- Developed a deep learning framework for combining time-independent data and time-dependent data to improve the prediction accuracy.

Mechanical Engineer   **Jan 2016 - June 2017**
Abul Khair Steel Melting Ltd, Chittagong, Bangladesh

- Led a manufacturing & maintenance team for the smooth operation of fully automated furnace (EAF) of 100 tons capacity.
- Developed quality assurance technique for reducing waste in material and optimizing a manufacturing process.
- Conducted a time-series analysis using 5 years data set in **R** for billet production forecasting
- Identifying design flaws in the melting plant system as well as two 80 tons of electric arc furnaces and developed approaches to address the flaws.
- Collected data from different department and used them to plan and execute breakdown or scheduled maintenance, created troubleshooting and preventive maintenance plans.

ACHIEVEMENT

- **Best paper award**, IDETC/CIE 2019 conference hosted by ASME for the paper, A Deep Learning Based Approach to Predict Sequential Design Decisions.
- Champion of Adobe Design Challenge in University of Arkansas.

SELECTED PUBLICATIONS

[J1] **Rahman, M.H.**, Schimpf, C., Xie, C. and Sha, Z., 2019. A CAD-Based Research Platform for Data-Driven Design Thinking Studies. Journal of Mechanical Design, pp.1-44. [**Accepted: July 2019; Impact Factor: 2.783**] Link

[C1] **Rahman, M.H.**, Xie, C. and Sha, Z., 2019.A Deep Learning Based Approach to Predict Sequnetial Design Decisions In ASME 2019 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, American Society of Mechanical Engineers, 2019[**Best Paper Award**] Link