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Md Ferdous Alam

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Education

The Ohio State Unuiversity — Columbus, OH
PhD in Mechanical Engineering — *Aug. 2018 – 2023 (expected)*

Bangladesh University of Engineering & Technology — Dhaka, Bangladesh
B.Sc. in Mechanical Engineering — *May 2010 – Sep. 2015*

Experience

Graduate Research Associate — Aug. 2018 – Present
The Ohio State University — *Columbus, OH*
- Development of learning algorithms for environments with expensive data
- Building autonomous additive manufacturing system with in-situ printing and characterization unit
- Supervising undergraduate students

Lecturer — Mar. 2016 – July 2018
Shahjalal University of Science & Technology — *Sylhet, Bangladesh*
- Teaching theoretical courses and taking laboratory sessions
- Taught courses: C programming, MATLAB, Engineering Mechanics, Measurement and Instrumentation

Intern — May. 2015 – July 2015
Electricity Generation Company of Bangladesh — *Dhaka, Bangladesh*
- Control and operation of gas turbine power plant

Key Publicaitons

- Md Ferdous Alam, Max Shtein, Kira Barton & David J. Hoelzle, "Accelerated online learning using inaccurate physics model and temporal abstraction", (to be submitted at CDC 2021)
- Md Ferdous Alam, Max Shtein, Kira Barton & David J. Hoelzle, "A physics guided reinforcement learning framework for an autonomous manufacturing system", (accepted at ACC 2021)
- Md Ferdous Alam, Max Shtein, Kira Barton & David J. Hoelzle, "Autonomous Manufacturing Using Machine Learning: A Computational Case Study With a Limited Manufacturing Budget", (MSEC 2020)
- Please visit google scholar for full list of publications

Projects

OptKit | *Python, jax* — Aug. 2020 – Present
- An open-source mathematical optimization library written in python
- Implementation of first order, second order, gradient free, Bayesian optimization algorithms
- Visualizing optimization problems in 1D/2D and exporting animations

Applied machine learning tutorials | *Python, scikit-learn, Pytorch, Tensorflow* — Aug. 2018 – Dec. 2018
- Implemention of classical Machine Learning algorithms (Regression, LDA, QDA, PCA, SVM etc.)
- Statistical data analysis

Technical Skills

Languages: Python, C/C++, MATLAB/Simulink
Libraries: Pytorch, Google Tensorflow, scikit-learn
Developer Tools: Git, PyCharm
CAD software: SolidWorks, AutoCAD

Relevant courses

Machine Learning/Optimization: Statistical Machine Learning, Reinforcement Learning, Advanced Nonlinear Optimization, Optimization in Mechanical Design, Probability and random variables, **Control/Dynamical System**: Linear System Theory, Optimal Control theory, Robust Control, Random Dynamical System, Design and Control of Mechatronics system, Digital Signal Processing, **Certification**: Deep Learning Specialization (DeepLearning.AI)

Additional Experience and Award

- Reviewer: ACC, Mechatronics (Elsevier journal), MSEC, NAMRC
- **Best Paper award (MSEC 2020)**, Undergraduate academic excellence (2011, 2014)