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## EDUCATION

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### The Ohio State University

*PhD in Mechanical Engineering*

Columbus, OH

*Aug. 2018 – Present*

### Bangladesh University of Engineering & Technology

*B.Sc. in Mechanical Engineering*

Dhaka, Bangladesh

*May 2010 – Sep. 2015*

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## EXPERIENCE

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### Graduate Research Associate

*The Ohio State University*

Aug. 2018 – Present

*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

*Shahjalal University of Science & Technology*

Mar. 2016 – July 2018

*Sylhet, Bangladesh*

- Teaching theoretical courses and taking laboratory sessions
- Taught courses: C programming, MATLAB, Engineering Mechanics, Measurement and Instrumentation

### Intern

*Electricity Generation Company of Bangladesh*

May. 2015 – July 2015

*Dhaka, Bangladesh*

- Working on control and operation of gas turbine power plant

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## PROJECTS

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### OptKit | *Python, jax, git*

Aug. 2020 – Present

- An open-source mathematical optimization library written in python
- Implementing 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, git*

Aug. 2018 – Dec. 2018

- Implementation of classical Machine Learning algorithms (Regression, LDA, QDA, PCA, SVM etc.)
- Statistical data analysis

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## TECHNICAL SKILLS

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**Languages:** Python, C/C++, MATLAB/Simulink

**Libraries:** Pytorch, Google Tensorflow, scikit-learn

**Developer Tools:** Git, PyCharm

**CAD software:** SolidWorks, AutoCAD

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## RELEVANT COURSES

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**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)

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## KEY PUBLICATIONS

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- [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

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## ADDITIONAL EXPERIENCE AND AWARD

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