Sourin Dey

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Education

08/2021 – present
Columbia, United States
Ph.D. in Computer Science
University of South Carolina
Selected Coursework: Data Mining, Computer Processing of Natural Language.

08/2019 – 12/2021
Laramie, United States
MS in Computer Science
University of Wyoming
Selected Coursework: Intro to AI, Randomness in Computation, Deep Reinforcement Learning.

05/2014 – 05/2018
Khulna, Bangladesh
B.Sc. in Electrical and Electronic Engineering
Khulna University of Engineering & Technology

Skills

Coding Skills
Python: PyTorch,TensorFlow, Scikit-Learn
C, C++, MATLAB,R(mlr, mlrMBO)

Version Control
Git

Research Interests

- Deep Learning & Neural Networks
- Optimization Techniques, Bayesian Modeling
- Generalized Additive Models

Professional Experience

08/2021 – present
Columbia, United States
Graduate Research Assistant
Sutton Lab, University of South Carolina

08/2019 – 12/2021
Laramie, United States
Graduate Research Assistant
Artificially Intelligent Manufacturing Center, University of Wyoming

Projects

2021 – present
Structure Agnostic Material Property Prediction using Graph Neural Network Variants.
Same material from different directions does not change the property. However, neural network can't learn it easily and thus augmentation becomes a big challenge. I am investigating variants of Graph Networks such as E3NN, ALIGNN to solve this issue for multiple-property predictions.

11/2020 – 08/2021
Investigation of exploration-exploitation trade-off of Bayesian Optimization to Optimize Laser Induced Graphene Process.
I developed a statistical analysis to balance the exploration-exploitation trade-off for expensive black-box optimization problems. This can help the optimizer to escape multiple local optima across parameter space and the model can be easily adapted to different optimization domains.

08/2019 – 07/2021 **Advanced Materials Manufacturing using Artificial Intelligence**
I worked on an automation project to optimize Laser-Induced Graphene Process(LIG) using Bayesian Optimization. LIG enables to produce high-quality graphene which has enhanced next-generation nano-circuit design. The automation led to no human in the loop. Here is the link of my work.

Publications

Optimizing Laser-Induced Graphene Production
IJCAI-ECAI (DOI 10.3233/FAIA220063)
Authors: Lars Kotthoff, **Sourin Dey**, Vivek Jain, Alexander Tyrrell, Hud Wahab, Patrick Johnson. *In 11th International Conference on Prestigious Applications of Intelligent Systems, 2022.*

Scalable deeper graph neural networks for high-performance materials property prediction
Patterns, Elsevier (DOI 10.1016/j.patter.2022.100491)
Authors: Sadman Sadeed Omee, Steph-Yves Louis, Nihang Fu, Lai Wei, **Sourin Dey**, Rongzhi Dong, Qinyang Li, Jianjun Hu

Extracurriculars

Volunteer, Bangladesh Students' Association, University of Wyoming

Instructor, Dept. of Chemistry & Biochemistry, University of South Carolina
Worked as an instructor for Python Programming Summer Camp Workshop