

SADMAN SADEED OMEE

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EXPERIENCE

Lawrence Livermore National Laboratory

Summer Research Intern

May 2024 – Current

Livermore, CA, United States

University of South Carolina

Graduate Research Assistant | Machine Learning and Evolution Laboratory

January 2022 – Current

Columbia, SC, United States

- **Research topic:** We use deep learning techniques to solve materials informatics problems (e.g., crystal structure prediction, materials property prediction, generative models for material) in our lab. My work on crystal structure prediction is similar to the protein structure prediction problem solved by AlphaFold2. I have also developed a state-of-the-art global attention-based Graph Neural Network architecture for the materials property prediction problem.
- **Concept / skills usage:** I mostly use Graph Neural Networks (GNNs) for my research. I have also used Convolutional Neural Networks, Transformers, Diffusion Models and other Generative Models for my different research projects. I am fluent in using PyTorch and PyTorch Geometric.

University of South Carolina

Graduate Teaching Assistant | Course: CSCE102 (General Applications Programming)

August 2021 – December 2021, August 2023 – Current

Columbia, SC, United States

- Taught HTML, CSS, and JavaScript to a total of 72 students, and two lab group of total 50 students.

NOTABLE PUBLICATIONS

1. **Omees, S. S.**, Louis, S. Y., Fu, N., Wei, L., Dey, S., Dong, R., Li, Q., & Hu, J. (2022). Scalable deeper graph neural networks for high-performance materials property prediction. *Patterns*.
2. **Omees, S. S.**, Wei, L., Hu, M., & Hu, J. (2024). Crystal structure prediction using neural network potential and age-fitness pareto genetic algorithm. *Journal of Materials Informatics*.
3. Varivoda, D., Dong, R., **Omees, S. S.**, & Hu, J. (2023). Materials property prediction with uncertainty quantification: A benchmark study. *Applied Physics Reviews*.
4. Dong, R., Zhao, Y., Song, Y., Fu, N., **Omees, S. S.**, Dey, S., Li, Q., Wei, L., & Hu, J. (2022). DeepXRD: A deep learning model for predicting XRD spectrum from material composition. *ACS Applied Materials & Interfaces*.
5. Hu, J., Stefanov, S., Song, Y., **Omees, S. S.**, Louis, S. Y., Siriwardane, E. M., Zhao, Y., & Wei, L. (2022). MaterialsAtlas.org: A materials informatics web app platform for materials discovery and survey of state-of-the-art. *npj Computational Materials*.
6. Fu, N., Wei, L., Song, Y., Li, Q., Xin, R., **Omees, S. S.**, Dong, R., & Hu, J. (2023). Material transformers: Deep learning language models for generative materials design. *Machine Learning: Science and Technology*.
7. Louis, S. Y., Siriwardane, E. M. D., Joshi, R. P., **Omees, S. S.**, Kumar, N., & Hu, J. (2022). Accurate prediction of voltage of battery electrode materials using attention-based graph neural networks. *ACS Applied Materials & Interfaces*.
8. Li, Q., Dong, R., Fu, N., **Omees, S. S.**, Wei, L., & Hu, J. (2023). Global mapping of structures and properties of crystal materials. *Journal of Chemical Information and Modeling*.

RELEVANT SKILLS

Programming languages: Python, C, C++, Java, JavaScript.

Machine learning (ML) / deep learning (DL) frameworks: PyTorch, Tensorflow, PyTorch Lightning, Keras, Scikit-learn.

ML / DL libraries: PyTorch Geometric (PyG), Deep Graph Library (DGL), Transformers (Hugging Face), PyTorch-Ignite, Pandas, NumPy, SciPy, Pymatgen, ASE, Matminer.

Other skills: \LaTeX , Git, Matplotlib, HTML, CSS, Java Spring Boot, MySQL.

EDUCATION

University of South Carolina

Ph.D. in Computer Science

Current GPA: 3.965/4.00

August 2021 – Present

Columbia, SC, United States

Bangladesh University of Engineering and Technology

B.S. in Computer Science

February 2015 – April 2019

Dhaka, Bangladesh