SADMAN SADEED OMEE

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EXPERIENCE

University of South Carolina **January 2022 – Current**
Graduate Research Assistant | Machine Learning and Evolution Laboratory Columbia, SC, United States

- **Research topic:** We use deep learning techniques to solve materials informatics problems (e.g., crystal structure prediction, materials property prediction) 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 using differentiable group normalization and skip-connections.
- **Concept / skills usage:** I mostly use Graph Neural Networks (GNNs) for my research. I have also used Convolutional Neural Networks, Transformers and Generative Models for my other researches. I am fluent in using PyTorch and PyTorch Geometric.

University of South Carolina **August 2021 – December 2021**
Graduate Teaching Assistant | Course: CSCE102 (General Applications Programming) Columbia, SC, United States

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

Bangladesh University of Engineering and Technology **May 2019 – July 2021**
Research Student | Graph Drawing and Information Visualization Laboratory Dhaka, Bangladesh

- Worked on unsupervised learning, mostly developing hierarchical clustering algorithms.

PUBLICATIONS

Journal Articles

1. **Omee, 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. Varivoda, D., Dong, R., **Omee, S. S.**, & Hu, J. (2023). Materials property prediction with uncertainty quantification: A benchmark study. *Applied Physics Reviews*.
3. Dong, R., Zhao, Y., Song, Y., Fu, N., **Omee, 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*.
4. Hu, J., Stefanov, S., Song, Y., **Omee, 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*.
5. Fu, N., Wei, L., Song, Y., Li, Q., Xin, R., **Omee, S. S.**, Dong. R., & Hu, J. (2023). Material transformers: Deep learning language models for generative materials design. *Machine Learning: Science and Technology*.
6. Louis, S. Y., Siriwardane, E. M. D., Joshi, R. P., **Omee, 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*.
7. Li, Q., Dong, R., Fu, N., **Omee, S. S.**, Wei, L., & Hu, J. (2023). Global mapping of structures and properties of crystal materials. *Journal of Chemical Information and Modeling*.
8. Wei, L., Fu, N., Siriwardane, E. M., Yang, W., **Omee, S. S.**, Dong, R., Xin, R., & Hu, J. (2022). TCSP: a template-based crystal structure prediction algorithm for materials discovery. *Inorganic Chemistry*.

RELEVANT SKILLS

Programming languages: Python, C, C++, Java, JavaScript.
ML / 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, Seaborn, HTML, CSS, MySQL.

EDUCATION

University of South Carolina **August 2021 – Present**
Ph.D. in Computer Science Columbia, SC, United States
Current GPA: 3.95/4.00

Bangladesh University of Engineering and Technology **February 2015 – April 2019**
B.S. in Computer Science Dhaka, Bangladesh