JOY DATTA

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≡ Resume objective

Currently working on the application of Data analytics, Machine learning and artificial intelligence to solve energy storage problems as a PhD candidate. I focus on real-life projects for finding high storage anode material of li-ion battery by applying Physics based Modeling and Data mining process. Having strong knowledge for initiating applications with Deep learning, Natural Language Processing, Density functional theory, Kinetic Monte Carlo Simulations, and Classical Newtonian Mechanics. I got research experience with solid state battery electrolyte, material synthesis and characterization. Hoping to build my career as a Machine learning engineer/ Data scientist in Battery domain.

≡ Educational Background

- Chittagong University of Engineering & Technology, Chittagong, Bangladesh (April 14-Jan 2019)
  Bachelor of Science
- New Jersey Institute of Technology, Newark, New jersey (Sep 20-Present)
  Doctor of Philosophy

≡ Publications

- Aniruddha S. Lakhnot, Reena A. Panchal, Joy Datta, Varad Mahajani, Kevin Bhimani , Rishabh Jain, Dibakar Datta and Nikhil Koratkar "Intercalation Hosts for Multivalent Ion Batteries", Journal Advanced Materials (Submitted-adma.202208608)
- Kaustubh G. Naik, Bairav S. Vishnugopi, Joy Datta, Dibakar Datta, and Partha P. Mukherjee, "Electro-Chemo-Mechanical Challenges and Perspective in Lithium Metal Batteries", Applied Mechanics Reviews (Submitted- AMR-22-1060)

≡ Conferences

- Joy Datta, Dibakar Datta, Predicting Stability of Alloying Si Electrodes for Multivalent Cations by Support Vector Regression, 2021 MRS Fall Meeting and Exhibit, Data-Driven Analysis Symposium, 2021.
- Joy Datta, Dibakar Datta, Predicting Stability of Alloying Battery Electrodes for Multivalent Cations by CNN-SVR, 19th U.S. National Congress on Theoretical and Applied Mechanics, June 2022.
- Joy Datta, Dibakar Datta, Investigating Next Generation Electrode Material for Ca ion Battery, SES 2022 Annual Conference at Texas A&M University in College Station, Texas, October 16 - 19, 2022

≡ Software Skills

- Programming Language :Python (Scikit-learn, NumPy, Seaborn, Matplotlib, Pandas, TensorFlow, Keras, PyTorch), MATLAB, C, C++
- Modeling: VASP, Cp2k, Castep, LAMMPS, Vesta, Avogadro, Ovito, Solid Works, Ansys
- Database: SQL, MySQL
- Data analysis: R, Origin, Topas

≡ Technical skill

- Machine learning and Deep learning: Classification, Regression, Feature Engineering, Advanced Optimization (Bayesian Search), Data Manipulation and Visualization (e.g., Matplotlib, Seaborn)
- Atomistic Modeling, Density Functional Theory (DFT), Ab initio Molecular Dynamics Simulations (AIMD), Finite Element Analysis (FEA)
- Foundation on Electrochemistry and Reaction Kinetics
- Chemical Vapor Deposition, Pulsed Laser Deposition for thin film growth of battery material
- Strong knowledge of Scanning electron microscopy (SEM), Transmission electron microscopy (TEM),X-ray diffraction (XRD), Raman spectroscopy

💼 Work experience

Research Assistant   Jan 20 - Jul 20

Missouri State University, Springfield, Missouri

- Performed computational simulation, and data analysis
- Atomistic modeling for Single Crystal Alloy
- Synthesis and characterization of 2D battery materials

Teaching Assistant   Aug 20 - Jun 22

New Jersey Institute of Technology, Newark, New Jersey

- Mentoring students on Automation technology
- Introduction to programming language

Research Assistant   Jun 20 - Present

New Jersey Institute of Technology, Newark, New Jersey

- Hybrid Machine learning model for battery electrode materials property prediction
- Interphase study between multiscale electrodes in presence of aqueous electrolytes
- Performing battery performance by density functional theory on Multiscale particles
- Inverse Machine learning model(GAN,VAE) for discovering novel materials
- NLP for extracting data from published articles

≡ Coursework

- Machine learning, Deep learning, Data mining, Linear algebra
- Statistical mechanics, Solid state physics
- Computational material, Molecular dynamics simulations, Material characterization and synthesis techniques, Mechanics of materials, Introduction to fuel cell & battery