Arpan Mukherjee

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SKILLS

PROGRAMMING
Python
MATLAB

MACHINE LEARNING
Regression
Support Vector Machines
Deep Learning
Uncertainty Quantification
Computer Vision
Active Learning
Transfer Learning
Cluster Analyses
Natural Language Processing

SOFTWARE
Git and Github
PyCharm
GRASS GIS

EDUCATION

PHD, AEROSPACE ENGINEERING
University At Buffalo - SUNY
February 2018 | Buffalo, NY
Thesis: Uncertainty Propagation Methods for High-Dimensional Complex Systems

MS, STATISTICAL QUALITY CONTROL AND OPERATIONS RESEARCH
Indian Statistical Institute
June 2013 | Kolkata, India
Thesis: An Algorithm for Many-Objective Optimization With Reduced Objective Computations: A Study in Differential Evolution

BS, CIVIL ENGINEERING
Jadavpur University
May 2011 | Kolkata, India
Graduated with First Class Honors

LINKS

Github:// **arpanisi**
Google Scholar:// **Arpan Mukherjee**

EXPERIENCE

UNIVERSITY AT BUFFALO | Postdoctoral Research Associate
Apr 2018 – | Materials Design and Innovation Department| Buffalo, NY

- Identifying **toxicophores** in Organic Chemicals using **Convolution Neural Network** and **Class Activation Maps** on SMILES representation
- Predicting **DFT** values using **Convolution Neural Network** from 2D chemical images of inorganic **Perovskites**
- Predicting **solar adoption** using 438 variables from US Census data for Erie and Niagara county
- Classifying binary octet compounds using **Convolution Neural Network**
- Performed **Modularity Optimization** to cluster and estimate uncertainty of the shapes of microstructural features in 3D chemical images obtained from **Atom Probe Tomography**
- Used nonlinear **Support Vector Machine** to identify interface chemistry for 3D microstructural images
- Visualized 3D point clouds of 27 million points using **Vispy** and **Open3D**

UNIVERSITY AT BUFFALO | Research Assistant
Aug 2015 – Jan 2018 | Buffalo, NY

- Uncertainty Propagation Methods for High-Dimensional Complex Systems
  - Developed two **Novel Algorithms** using **Spectral Clustering** and **Non-negative Matrix Factorization** integrated with **MPI** that performs simulation under uncertainty with exponentially less time as compared to traditional **Sampling** and **Quadrature**-based methods.
  - Performed exponentially faster Uncertainty Quantification on **High-dimensional Building Thermal Model** and **Large-Scale Volcanic Flow Model**

ABB INC | Deep Learning Research Intern
Jun 2017 – Aug 2017 | Bloomfield, CT

- Used a Convolution Neural Network **Pointnet** to semantically segment a 3D scan of a living room into labeled objects. Visualized the scene using **Potree**.
- Used a Convolution Neural Network **GQCNN** to identify optimal grasping location of 3D objects. Used **OpenCV** to record real-time data and grasp using **ABB YuMi**. Identified reasons for false positives and suggested improvements over the algorithm.

INFOSYS | Data Science Intern
Mar 2013 – Jul 2013 | Kolkata, India

- Prepared a **Panel-Data regression** dependency model to understand the growth of the company from its sales process. Collected a data spanning over multiple years. Along with the dependency model, some major dimensions of factors have been identified, by **Principal Component Analysis** and **Factor Analysis** to **reduce dimensionality of the data**.

INDIAN STATISTICAL INSTITUTE | Research Assistant
Jul 2012 – Feb 2013 | Kolkata, India

- An Algorithm for Many-Objective Optimization With Reduced Objective Computations: A Study in Differential Evolution
  - Integrated Multi-objective **Differential Evolution** with correlation-based objective selection for achieving faster **Pareto Optimality** for problems involving large number of objectives.