Arpan Mukherjee

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SKILLS

PROGRAMMING

Python
C/C++
MATLAB

MACHINE LEARNING

Regression
Support Vector Machines
Naive Bayes
K-Nearest Neighbors
Decision Trees
Cluster Analyses
Discriminant Analysis
Deep Learning
Uncertainty Quantification

SOFTWARE

Git and Github
GrassGIS
PyCharm
Clion

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

- Used a 97% accurate **Convolutional Neural Network** to extract features from 2D chemical images of inorganic **Perovskites**
- Developed a 99% accurate **Multilayer Neural Network** for a large 3D Point Cloud to classify atoms based on their spectroscopic properties using **tensorflow**. Compared against other traditional classification methods.
- 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 point clouds of 27 million points using **Vispy**

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.