Akshay Kumar Varanasi

Interested in **Data Science –** Full Time Positions, Internships

www.linkedin.com/in/akshay-kumar-varanasi
https://github.com/Varanasi-Akshay
akshayvaranasi@utexas.edu   +1 201-682-4720

Education

Master of Science in Computational Science, Engineering and Mathematics   December 2019
The University of Texas at Austin   GPA: **3.73/4.0**
Relevant Coursework: Algorithms of Data Science, Inversion and Machine Learning, Applied Data Visualization/Optimization, Functional Analysis, Numerical Linear Algebra, Parallel computing, Bioinformatics, Time Series, Bayesian Deep Learning

Bachelor of Technology in Materials Engineering and Industrial Engineering (Minor)   May 2017
Indian Institute of Technology, Madras   GPA: **9.23/10**
Awarded **Steel Scholarship** for academic excellence in Undergraduate.

Skills

Software and Languages: Python, R, SQL, Fortran, MATLAB

Data Science Packages: Python- *Pytorch, keras, tensorflow ,sklearn, pandas, numpy, scipy*

Machine Learning: Linear and Logistic Regression, PCA, Decision Trees, Random Forest, Gradient Boosting, SVMs, KNN

Deep Learning: Neural Networks, CNN

Statistics: ARMA Modelling, Exponential Smoothing, Hypothesis Tests, F and t statistics, Time Series Analysis.

Data Science Projects

Temperature Prediction of Austin using Timeseries Analysis   April 2019 – May 2019
➢ Stationary, Non-stationary and ARMAV models were used to model temperature along with humidity data to get 1-step rolling forecast and 31-steps ahead forecast of the Austin's temperature.
➢ Non-stationary model with yearly periodic trend gave the best prediction results with lowest forecast RSS .

Neural Network model for Hyperelasticity   October 2018 – November 2018
➢ Built a neural network model as a surrogate constitutive model for computational solid mechanics using Pytorch.
➢ Obtained an accuracy of 90% in the prediction of Stress on hyperelastic materials from biaxial strain values.

Image Classification on Open Image Dataset using CNN   October 2018 – November 2018
➢ Trained a Convolutional Neural Network model using Keras in R on over 10,000 real world images comprising of 20 different classes.
➢ SQL database for labels was created using PostgreSQL and read directly from R by connecting it to the database.

Denoising of Hyperspectral images using NAILRMA and classification using SVM   April 2018 – May 2018
➢ Denoised the Hyperspectral image using Noise-adjusted iterative low rank matrix approximation method and performed convergence analysis.
➢ Used different multi-class SVM strategies like One against one and One against all for classification of the data with Hyperparameters optimized using Bayesian optimization**.**

Parallelization of bioheat transfer code   March 2018 – May 2018
➢ Used Open-MP to parallelize existing MPI parallelized Bioheat transfer code to get faster results due to hybrid parallelization
➢ Studied the computational inefficiencies and performed strong and weak scaling studies.

Research

Low rank approximation of Hyperspectral images   May 2018 – June 2018
➢ Used Tensor Decompositions Tucker and CP to find various rank approximations of the Hyperspectral images.
➢ Optimal low-rank approximation was found based on various image quality parameters like PSNR,CC,SSIM.

Internship – TRDDC   May 2016 – July 2016
Project Title: Simulation of Mechanical Properties of microstructure under different process parameter
➢ Generated microstructure using a C++ GPU code for different process parameter and simulated microstructure was binarized and meshed in meshing software OOF
➢ Mechanical properties of the simulated microstructure were calculated using micro-mechanics with the help of FEM software Calculix.