Porosity data are available on a Cartesian grid of 100\*100. There is a specific data file for every registered student. The File format is as “x-location, y-location and porosity value”. You can pick yours by obtaining your file number within “list.txt”. It is worth noting that the files have been assigned randomly. An analytic academic report containing your attempt is essential for the evaluation process. You “must” elaborate as much as you can. You are free to employ any software familiar with. This project will count about 20% of the final grade/.

1) Perform a full EDA

1. Frequency Table and Histogram
2. Cumulative Frequency Table and Histogram
3. PDF and CDF
4. Normal Probability Plot
5. Summary Statistics
   1. E1- Measures of location of the distributions
   2. E2- Measures of spread of the distributions
   3. E3- Measures of shape of the distributions
6. Detection of Outliers
7. Confidence interval (C.I) for mean and variance of data

2) Check (and compute if possible) whether you can compute any measure of heterogeneity

3) Calculate:

* Variogram and check for any possible anisotropy
* Covariogram (check for any possible anisotropy )
* Fit the experimental variogram with an admissible model

4) Compute Kriging map and variance by

* SK
* OK
* Check for possible trend and perform UK

5) Recalculate the variogram (Covariogram ) with whole kriging map and compare it with experimental variogram

6) Perform Kriging the mean and its variance

7) Provide a 99 Percent C.I. for KM and compare it with case iid (case 1.7)

8) Provide two realizations with SGS and recalculate the variogram of whole map and compare it with experimental variogram

9) Employ a thresholding scheme by applying 25 and 75 percent quartiles. Provide indicator data zone with low, medium and high-quality section of reservoir.

1. Calculate the variogram of indicator data
2. Perform a SK on indicator data of high quality section of reservoir.
3. Construct a SIS simulation