

Assignment 8: Polynomial Regression

1. PFA the data with dependant variable y and independent variable x .
2. Fit a polynomial regression model (y modelled as linear function of various higher degree terms of x) in following steps
3. 80:20 split into train and test set
4. Create 30 samples of size 20 each.
 - a. For each of the sample
 - i. Incrementally fit polynomials of degree upto 10.
 - ii. Measure train accuracy using 20 train data points and test accuracy using the full test set
 - b. Use violin plot to observe the fluctuations in test error corresponding to the degree
 - c. Create another violin plot of degree vs (train error – test error)
5. From the training data sample 20 points.
 - a. Use $k=5$ fold cross validation to determine the highest degree polynomial you should fit on this sample
 - b. Once you finalise the highest degree, train the model of that degree on the 20 sample points
 - c. Use the above model to measure accuracy of model on the test set
6. On the full train data, use $k (=10)$ fold cross validation as well as l_1 and l_2 regularisation to fit a polynomial and measure accuracy on test data.