Department of Computer Science and Engineering

CSE-214: Data Numerical Methods Sessional

Assignment on Regression Analysis

In our third lab, we have seen basics of regression analysis, mathematical background and hands-on on simple linear regression analysis with a generated dataset.

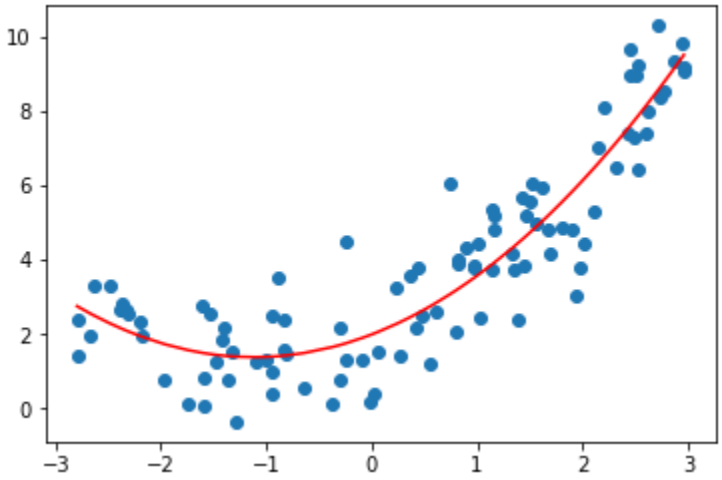
In this assignment:

1. You have to do Polynomial Regression Analysis on *world Covid-19 dataset*.

2. In linear and multiple linear regression, we fit data points in a straight line. The mathematical model for linear regression is

$$y = a_0 + a_1 x + e$$

Polynomial linear regression is necessary where datapoints cannot be fitted into a straight line. Such case is shown in the following diagram.



The mathematical model for polynomial regression is

$$y = a_0 + a_1 x + a_2 x^2 + e$$

Use least square fit criteria to determine values for a_0, a_1 and a_2.

3. You have to analyze Bangladesh covid-19 data for the months April and May. You are given a dataset where total number of covid-19 cases are given for each date. For simplicity, dates are mapped into simple integer numbers from 1 to 61.

4. Create a regression model keeping *date* as independent variable (*x*) and *total_case* as dependent variable (*y*). Find R^2 score for your model.

5. Create a user function which will take a date as parameter and print the predicted and actual values of total covid-19 cases.

6. Submit only one MATLAB file. Rename it as per your student id (<std id>.m). If your id is 201914001, rename your MATLAB file as 201914001.m. Do not compress it nor include any other file with your submission.

7. DO NOT COPY FROM ANYWHERE. If you do copy from internet or from any other person or from any other source, you will be punished severely and it is obvious. More than that, we expect fairness and honesty from you. Don't disappoint us!

Marks Distribution

Ser	Description	Marks
1	Creating and executing regression models	8
2	Creating a user defined function	2
Total		**10**

* Deadline for submission is **Friday, 20 October 2020 11:55pm**

* Please leave a comment if find any difficulties.