# PART II : Polynomial Regression

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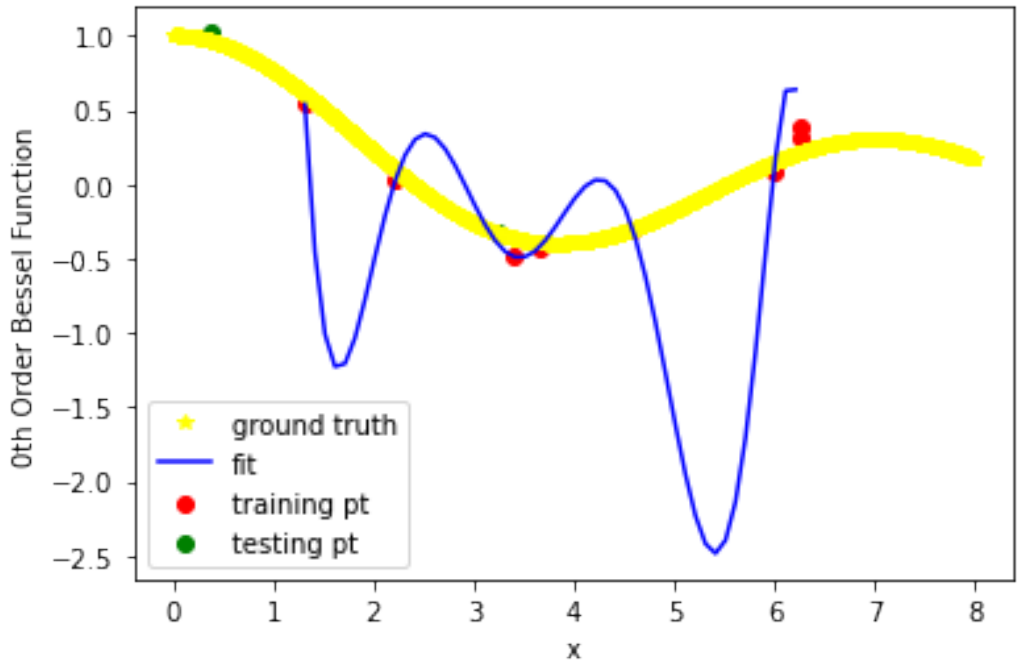
## 1. Aim

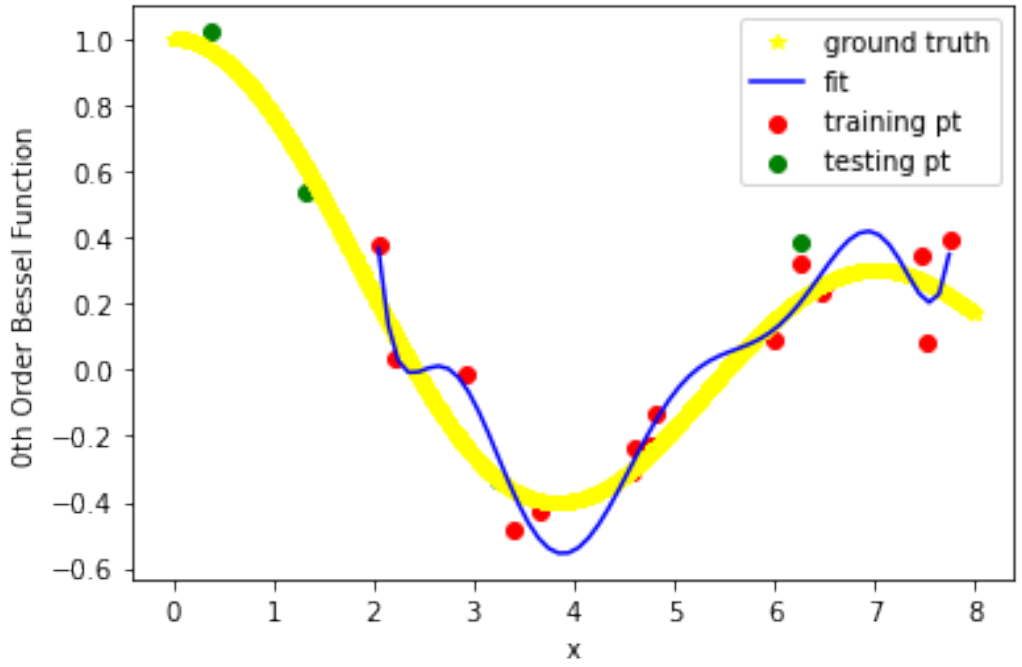
*Aim of this homework is to find the best coefficient of the polynomial fit for the randomly chosen data from the noisy Bessel function and to see if it similar enough to real Bessel function.*

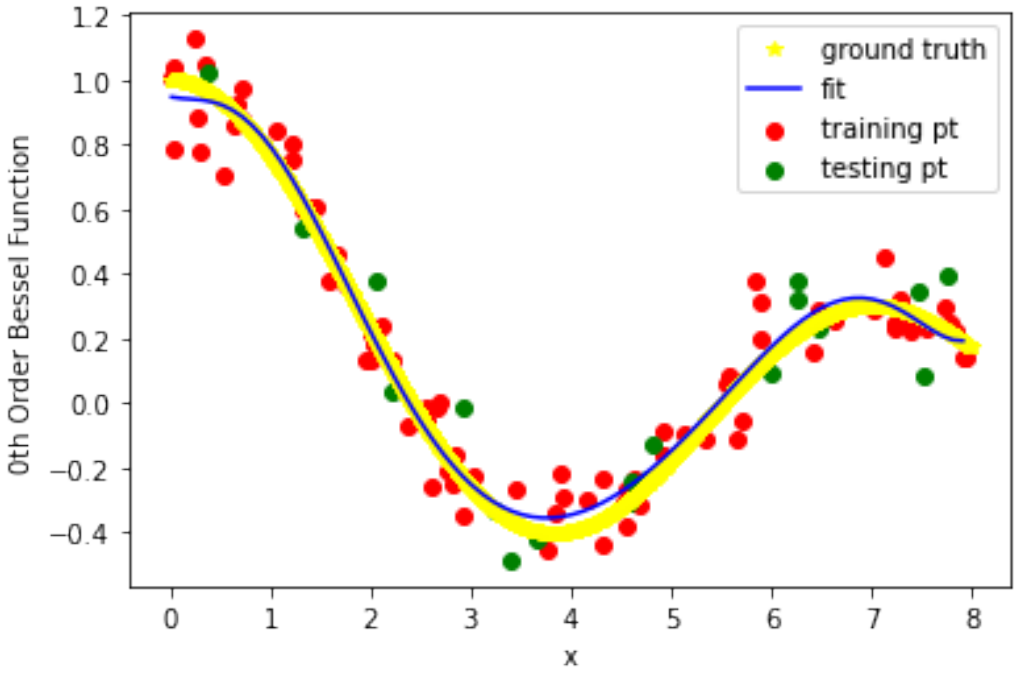
## *2. Analysis of Code*

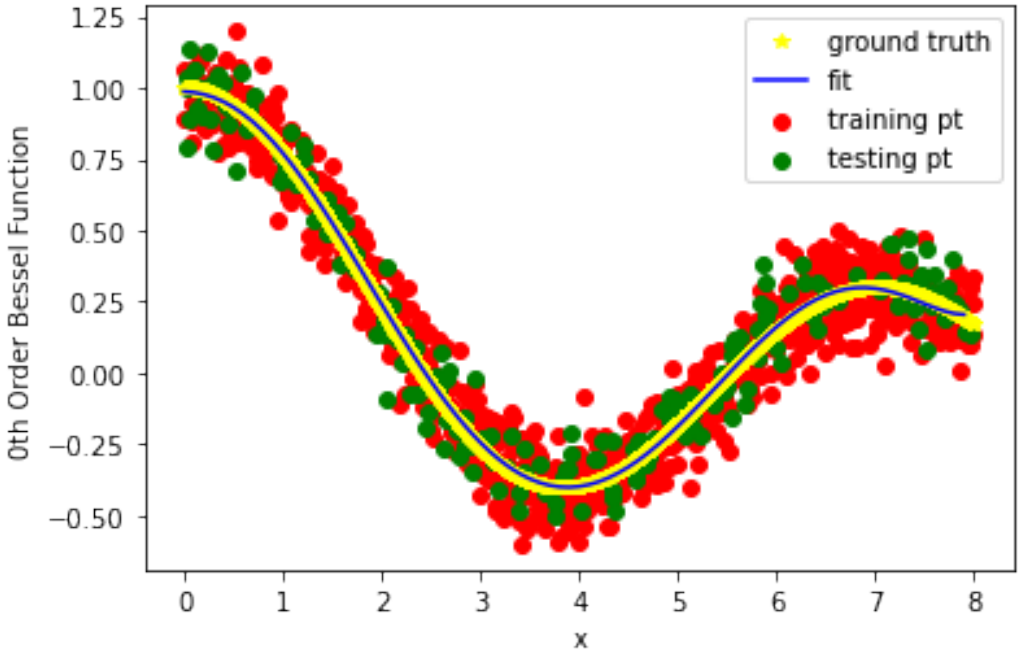
*1:Plot the Bessel function for every x.*
*3:For every x, produce its noisy Bessel value y and assign them as data matrix .*
*4:Pick random rows from the data matrix, split them into training and testing sets .*
*5:Fit the data to 8 th order polynomial model with sklearn library.*
*6:Plot the real Bessel function,testing and training points,polynomial fit.*

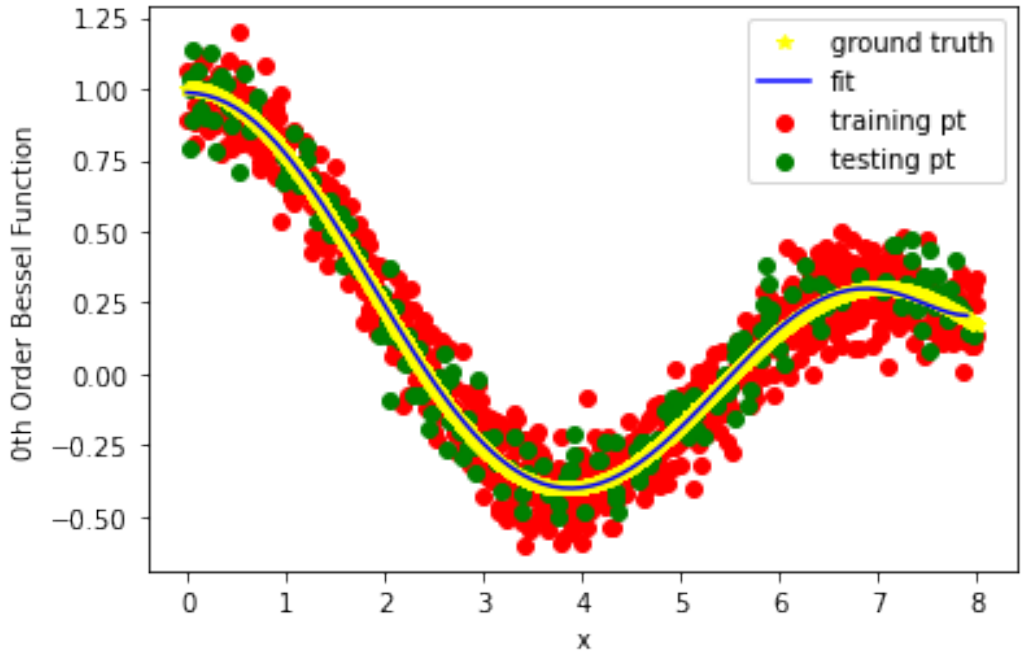
## *3. Result*


0th Order Bessel Function
x
ground truth
fit
training pt
testing pt


0th Order Bessel Function
x
ground truth
fit
training pt
testing pt


ground truth
fit
training pt
testing pt
0th Order Bessel Function
x


ground truth
fit
training pt
testing pt
0th Order Bessel Function
x




*As it can be seen from the graph, increasing the number of training testing points makes the fit more accurate.*