Data Analysis and Visualisation

Mini project on assessing video quality

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Problem Description:

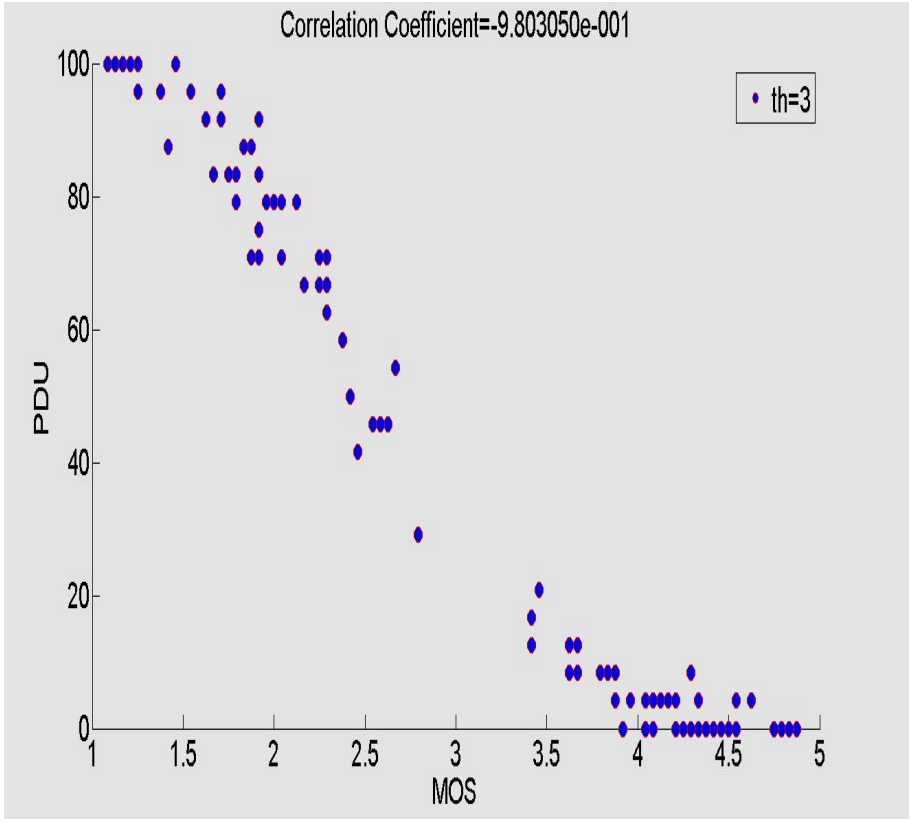
analyze the relationship between MOS and PDU and in the process develop prediction models.

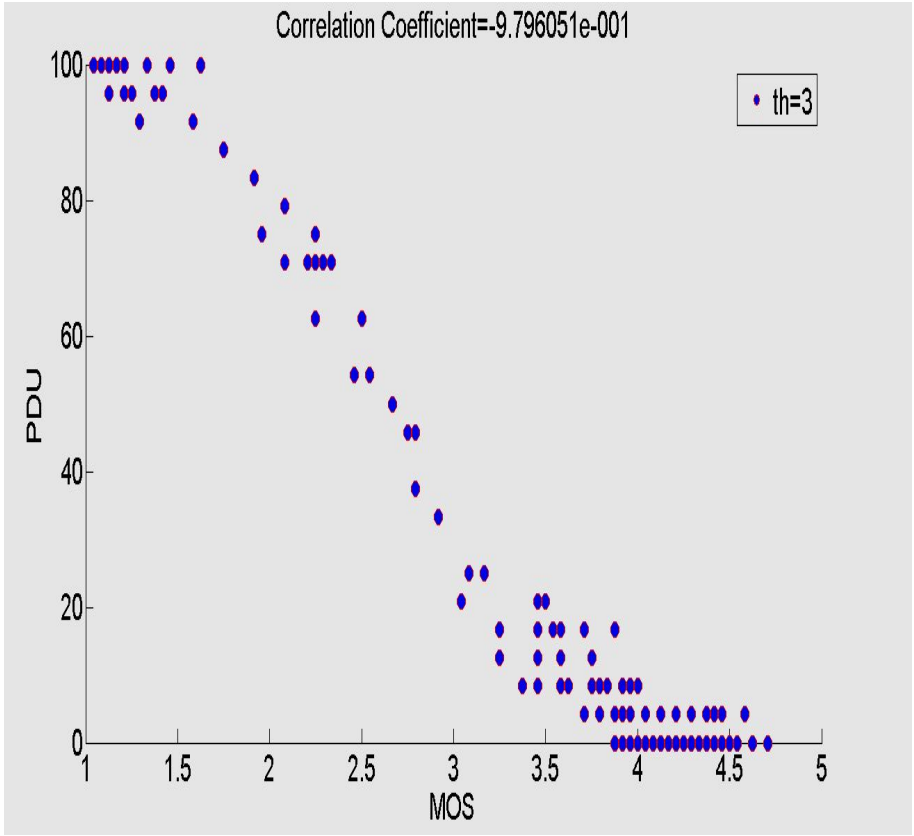
The two given datasets are not related to each other except same rating scale.

Obtain the prediction models(linear, logic and gaussian) and finding the statistically better model for analysis(using F-test and nonparametric Bootstrapping)

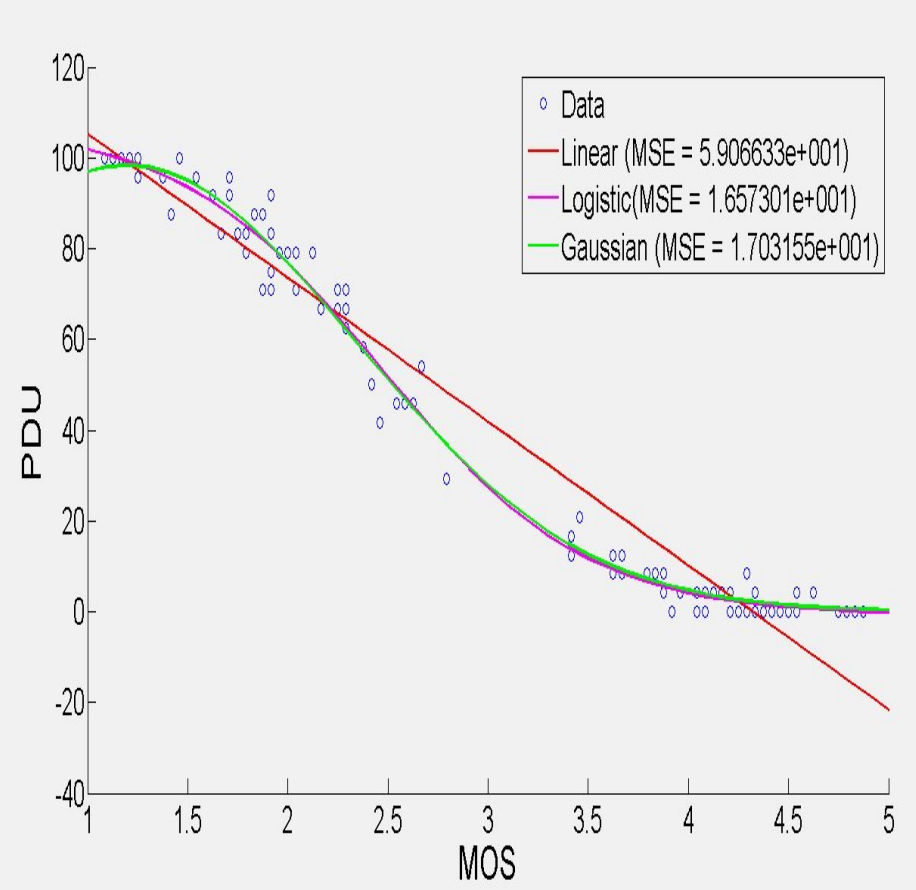
Training the data of one to another and using the mean squared error between the predicted and actual PDU as the criterion, find which model is best one for predicting PDU from MOS.

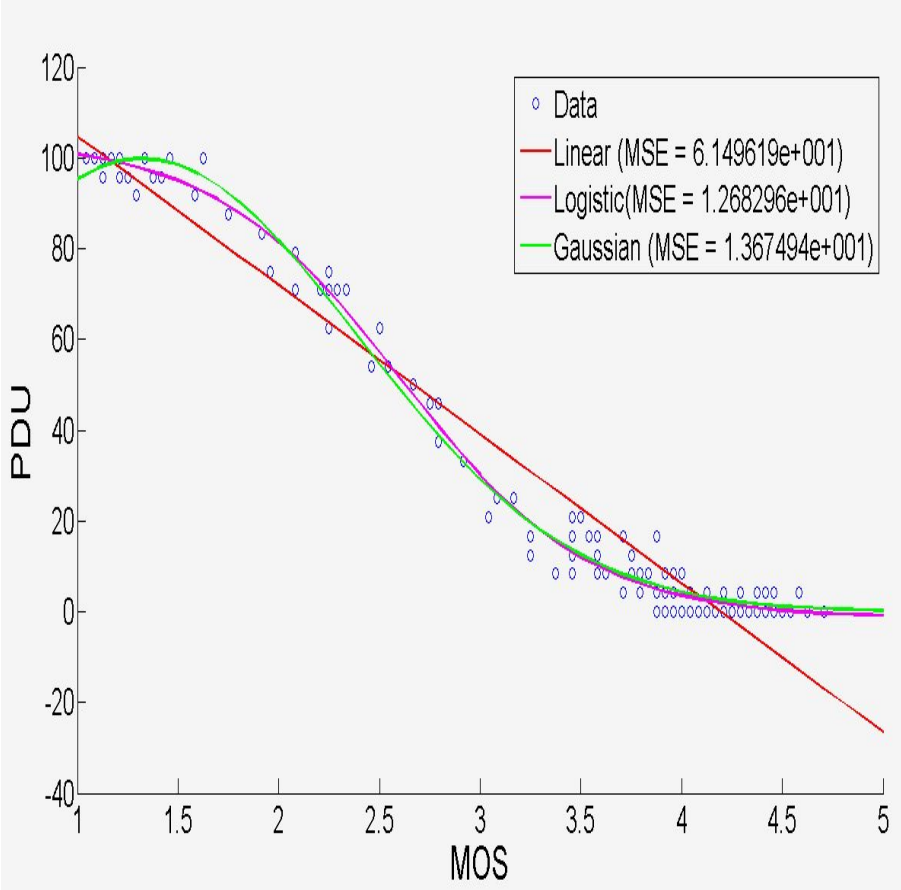
Scatter Plot for MOS and PDU and Corr. Coeff.





Prediction Models for PDU



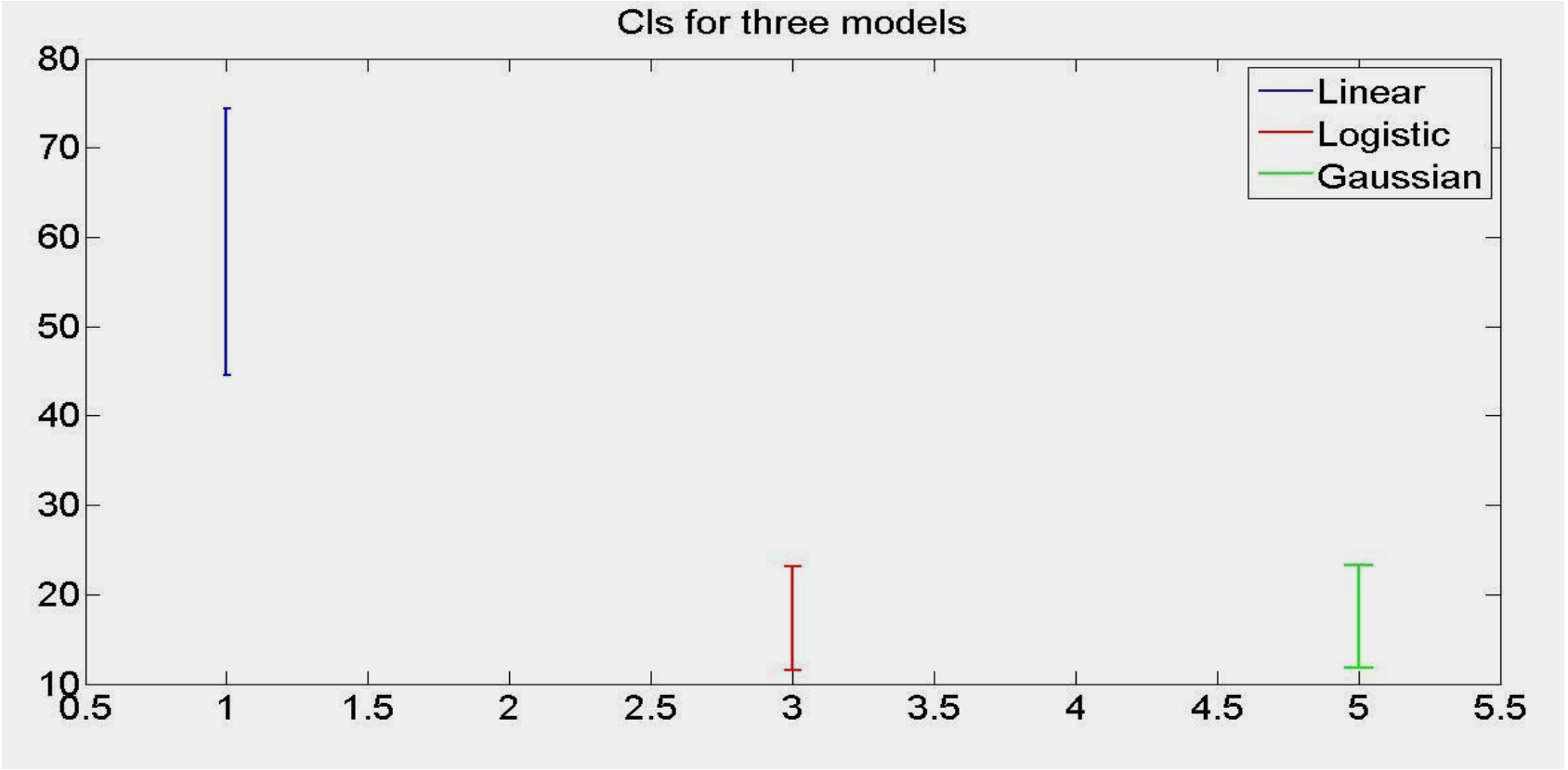


Compare Models using F -Test

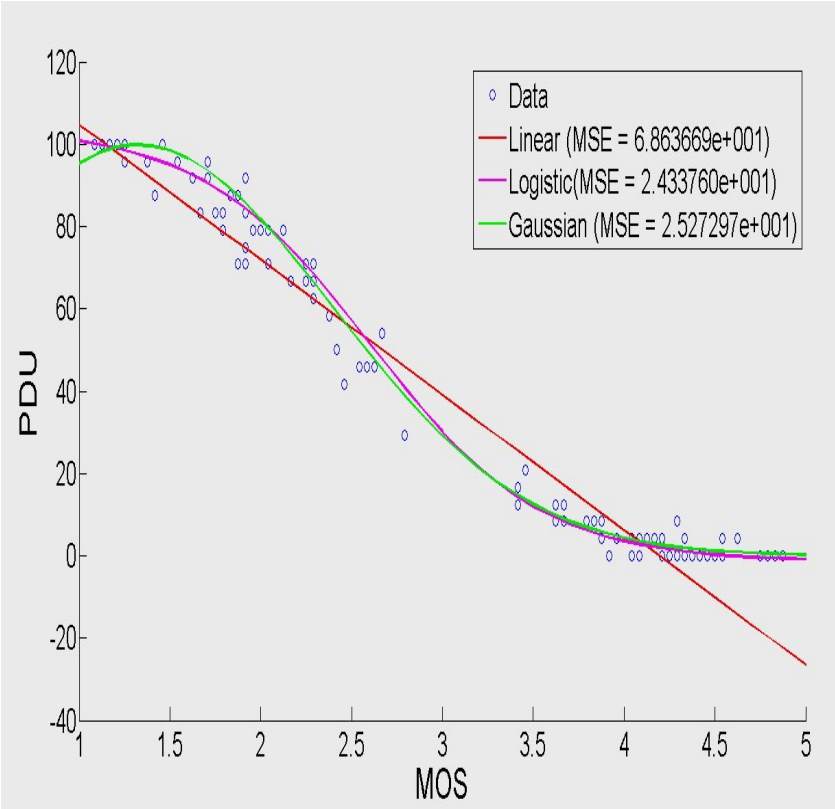
- Variances of logistic model and Gaussian Models are statistically similar.
- Variance of linear model is statistically higher than logistic and Gaussian Models.

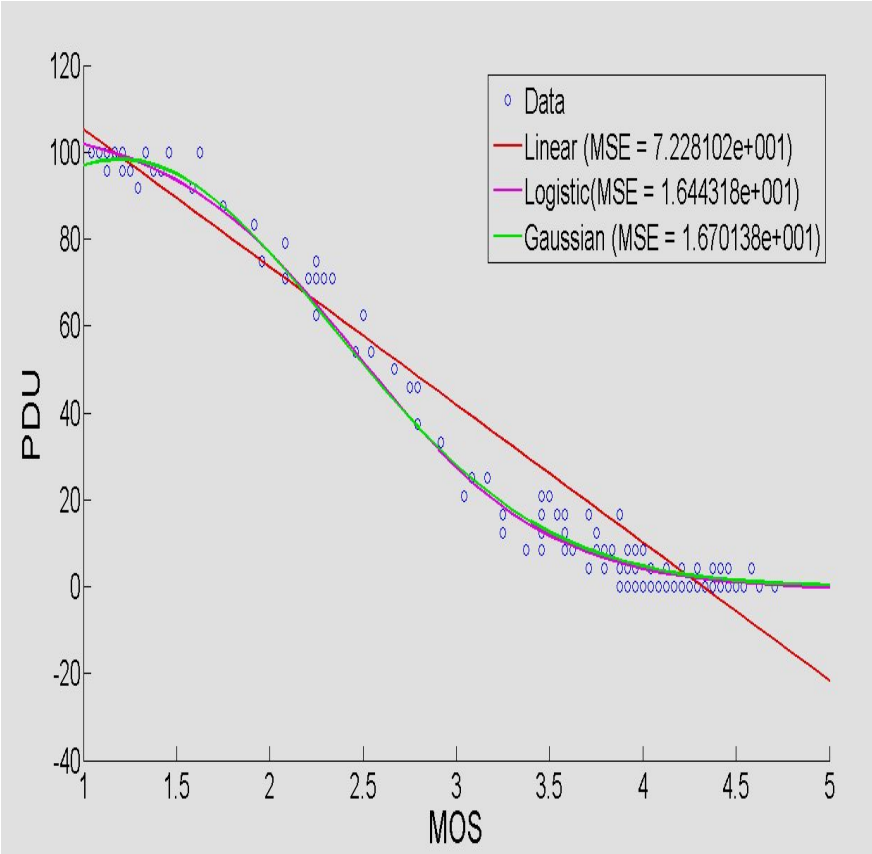
	data_100	data_144
Linear and Logistic	25.6401 (0.0253 - 3.8343)	38.4872 (0.0253 - 3.7878)
Logistic and Gaussian	0.5534(9.8715e-004 - 5.1835)	1.5643(9.8559e -004-5.133)
Linear and Gaussian	51.8291(9.8715e-004 - 5.1835)	73.4370(9.8556e-004 - 5.1329)

Compare models using nonparametric bootstrapping



Q5


Data
Linear (MSE = 6.863669e+001)
Logistic(MSE = 2.433760e+001)
Gaussian (MSE = 2.527297e+001)
PDU
MOS
120
100
80
60
40
20
0
-20
-40
1
1.5
2
2.5
3
3.5
4
4.5
5


Data
Linear (MSE = 7.228102e+001)
Logistic(MSE = 1.644318e+001)
Gaussian (MSE = 1.670138e+001)
PDU
MOS
120
100
80
60
40
20
0
-20
-40
1
1.5
2
2.5
3
3.5
4
4.5
5