

C) Compute the mean order value for gender 0 and for gender 1. Do you think the difference is significant?

Ans : Yes there is a significant difference. The difference is 13.19 (363.890006-350.708361)

D) Assuming a single gender prediction was made for each customer, generate a confusion matrix for predicted gender. What does the confusion matrix tell you about the quality of the predictions?

Ans : confusion matrix looks like
[3349 3410]
[1463 5249]

1) From the confusion matrix we can compute the accuracy score
 $\text{Accuracy_score} = ((\text{TP} + \text{TN}) / \text{float}(\text{TP} + \text{TN} + \text{FP} + \text{FN}))$
0.6382599658525722
From this we can say that round 63% of the times the classifier is correct in predicting the gender

2) $\text{Classification_error} = (\text{FP} + \text{FN}) / \text{float}(\text{TP} + \text{TN} + \text{FP} + \text{FN})$
0.3617400341474278
From this we can say that around 36% of the times the classifier gives incorrect prediction. So the classifier is a good one in real time world but not the best in terms of predictions.

3) $\text{Sensitivity} = \text{TP} / \text{float}(\text{FN} + \text{TP})$
0.7820321811680572
When the actual value is positive or correct the classifier yields correct results 78% of the times.

4) $\text{False_positive_rate} = \text{FP} / \text{float}(\text{TN} + \text{FP})$
0.504512501849386
When the actual value is negative or incorrect the classifier yields incorrect results 50% of the times.

e) $\text{precision} = \text{TP} / \text{float}(\text{TP} + \text{FP})$

0.6061900912345537 = 60%

E) scikit-learn, Jupyter Notebook are some of the tools and libraries which helped me in solving this problem. With Jupiter notebook, I was able to execute the code in cells and was able to figure out the errors at each point in execution. With scikit learn matplotlib lib helped me in generating visualisations. Overall this is an interesting assignment with a few visualisations.