# MLP

1) Dataset A : With transform the difference is minimum between training and test Roc\_Auc score , i.e,  ,0.0002. All the other treatment methods result in underfitting and the test roc\_auc score exceeds that of the training score. The average score for the training dataset was around 0.85 and for the test dataset it was around 0.85.

2) Dataset B : MADe method performs the best with the difference being 0.0103. Our methods do fairly well with the difference being around 0.0190.The average score for the training dataset was around 0.90 and for the test dataset it was around 0.88.

3) Dataset C : Our Ci\_1\_v1 method performs the best while keeping the difference between the training and the test Roc\_Auc score to the minimum at 0.0134. The average Roc\_Auc score for training and test dataset were 0.91 and 0.89 respectively.

4)Dataset D : The best outcome was with simple transform Resulting in the minimisation of the difference to about 0.0456 while others ranged between [0.06,0.1]. Our methods did not have a very drastic effect on it .d the difference was about 0.084 . The average Roc\_Auc score for training and test dataset were 0.94 and 0.87 respectively.

5) Dataset E(Mortgage) : The scores were strange and the roc\_auc scores dropped quickly with any sort of outlier treatment. It was around 0.88 and 0.85 and dropped to about 0.75 on average.

# GBM

1) Dataset A :The Roc\_Auc score difference with or without transform without any outlier treatment and just applying box-cox and Yeo-Johnson transform. It was 0.0043. Other outlier treatment methods  are applied and the best result us obtained using the MeanAd treatment as the Roc\_Auc(Training) and Roc\_Auc(test) difference was the least (0.0036) all though other methods were also not very far away and most of them had Roc\_Auc(Training/Test) around 0.89  with the difference between the values ranging between [0.0043,0.0046). Our methods CI\_1 and CI\_2 did not outperform the MeanAD treatment and produced identical result to the adj box plot treatment result , i.e, 0.8980 and 0.8936 respectively for training and test sets.

2) Dataset B :The Roc\_Auc score difference showed underfitting in the model as the test Roc\_ Auc score was more than the training set in case of transformed data( Same without transform). The best performance was achieved by our CI\_1 and CI\_2 methods with the difference being just 0.0001 between test and training Roc\_Auc score. The score was 0.9451 and 0.9450 respectively.

3) Dataset C: The best found treatment was CI\_1\_v1 and CI\_1\_V2. The Ci\_2 performed well to keeping the difference between the training and test the least , i.e, 0.0074. The roc\_auc score was about 0.9478 and 0.9404

4) Dataset D : This was the most intriguing dataset as it produced unexpected results. The MADe treatment was found to be the most effective with the difference in ROC\_Auc score being just 0.0473. our methods performed decent enough and the difference was in the range [0.0518,0.0542]. Least difference was achieved without treatment which was quite surprising. The training roc\_auc was around 0.95 and test Roc\_auc was around 0.90.

5) Dataset E ( Mortgage) : Best result was found with Median treatment and the difference was found to be around 0.0155. The difference with our methods ranged between [0.0169,0.0173]. The average roc\_auc score was around 0.84 and 0.83 respectively for training and test datasets.

# Logistic Regression

1) Dataset A:  Our Ci2\_V1 performs the best with little to zero difference between the training and test Roc\_auc score. It also gives the highest roc score with both being 0.8604.

2) Dataset D: The minimum difference was found with Ci\_1\_v1 although it appears to be a case of underfitting as the roc\_auc scores respectively are ,0.8816 and 0.8826. The best fit model had more difference in scores but can be described with MADe method. The roc\_auc averages are 0.88 and 0.86 for training and test datasets respectively.

3) Database B:The best result yet again from the simple transformed with the highest roc\_auc scores and difference of just 0.0004. Our methods produced difference of 0.0020 with no improvement in the roc\_auc scores. The average roc\_auc score was 0.89 and 0.88 for training and test datasets respectively.

4) Dataset C : Best result with Simple transform and the difference came out to be 0.0019 which is quite great. The other methods tend to underfit.

5) Dataset E (Mortgage): Again simple transformed yielded better results with the difference being just 0.0004. Our methods give a difference of about 0.0030 with no major improvement in roc\_auc scores.