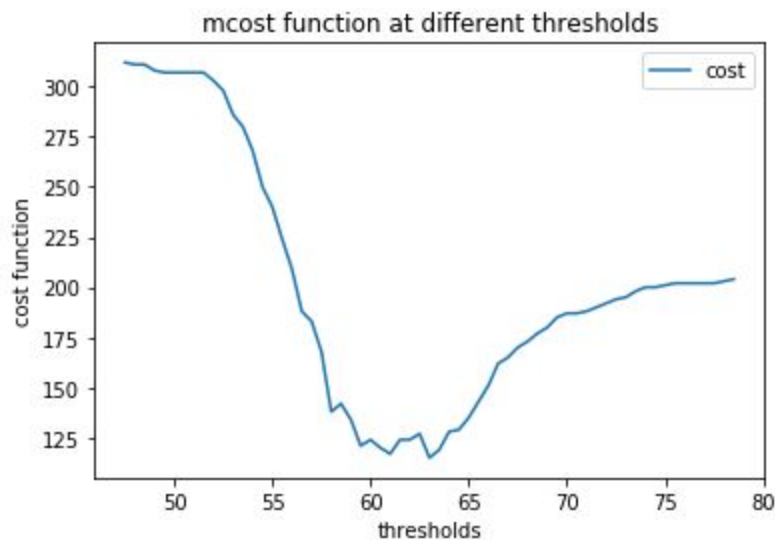
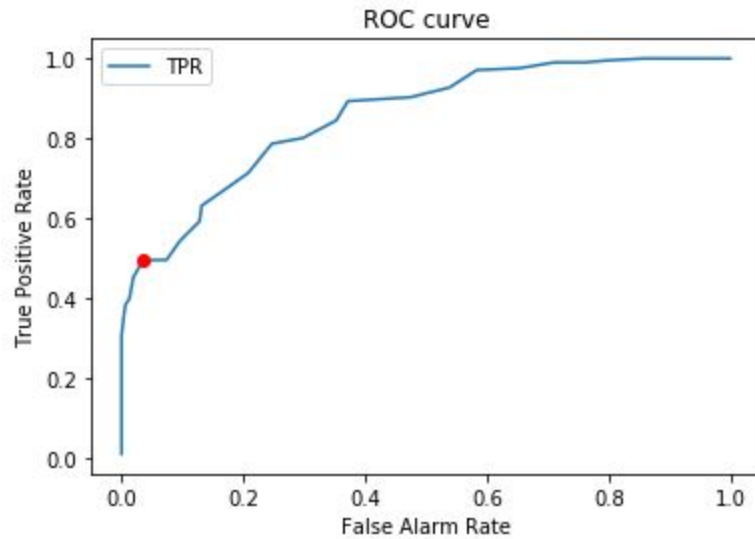


1.

- a. If we are trying to maximize safety, we would set the threshold lower to reduce the overall speed on cars, because accidents are less dangerous at lower speeds. This would be done by checking if each new missclass rate is strictly better than the previous best
- b. If we wanted to maximize public trust in police, we would check if each new misclass is better or equal to the previous best, resulting in higher choiced in ties because less tickets will be handed out.
- c. best threshold is 63 mph with a cost function value of 115
- d. The threshold would likely move up if false alarms are weighted more heavily. With this dataset, the threshold moves to 63.5 mph with a cost of 125, which makes sense because avoiding a few false positives right near the threshold would shift that threshold upward
- e. Objective:  $FP + FN$ , regularization:  $FP$ . the amount of regularization is very large and as a result heavily distorts the results.
- f. 104 false negatives
- g. 11 false positives
- h. This method gave a threshold that was 5 mph higher than the previous hw



i.



- j.
- k. In this assignment i learned the effect that penalizing false alarms more than false negatives has, and reviewed how to make an ROC curve and a 1d classifier. Additionally, i picked up a few more tricks for completing tasks for this class with python. A 1d classifier can be applied to a multidimensional dataset by reducing the dimensions in the data. Nothing was particularly challenging in the assignment, however i initially plotted the ROC curve with the total number of false positives and false alarms, rather than the rates.