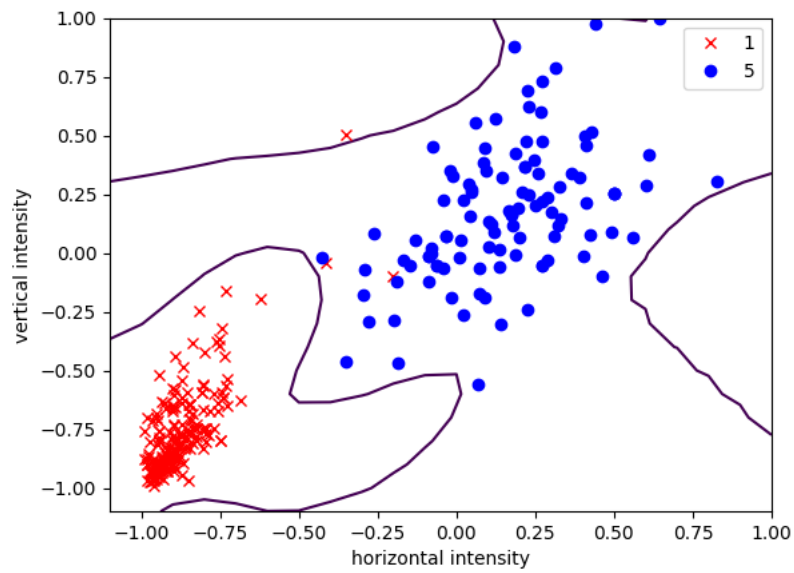
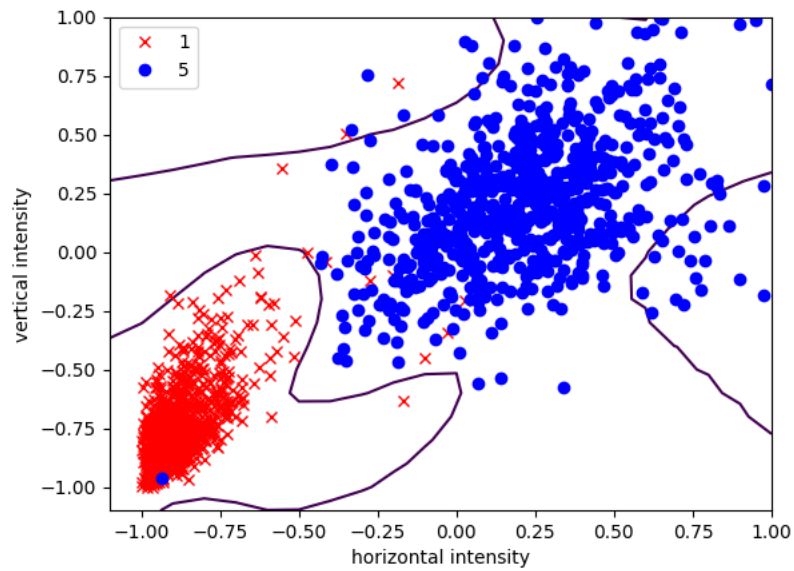


1. The dimensions of Z are 45
2. training data:

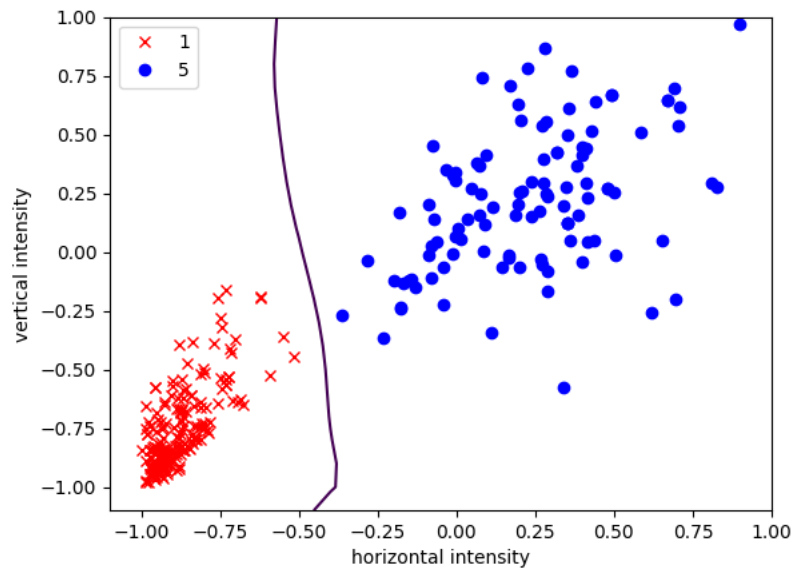


testing data:

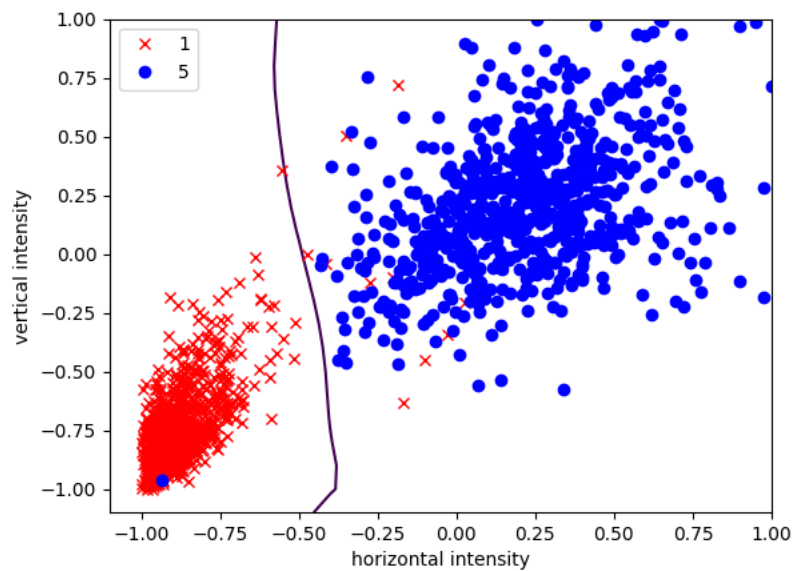


The data appears to be **overfitted**

3. training data:

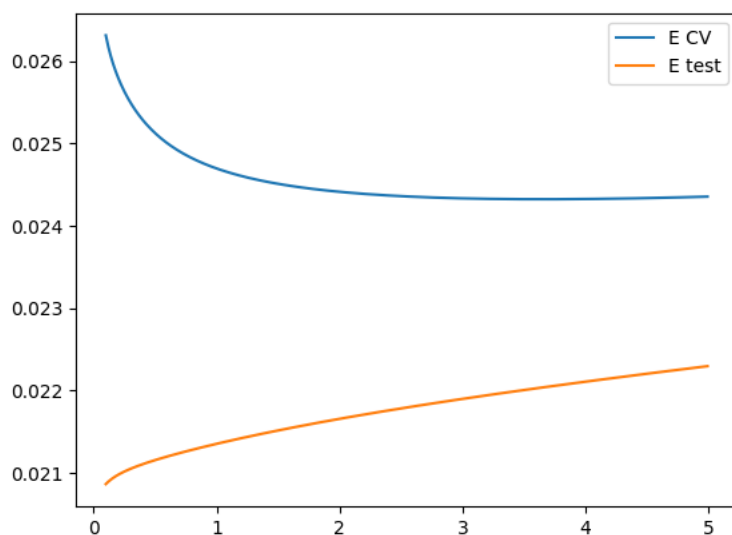


testing data:



Data is regularized, there doesn't appear to be any under or overfitting.

4. Plot:



I chose my values for $\lambda \in \{0, 0.01, 0.02, \dots, 5\}$, behavior wise, it appears that as the regularizer increases, the cross validation error decreases, while the regression error on the test set increases as the regularizer increases.

5. Plot with $\lambda = 3.64$:

