

ECE 901 Homework 3

1. Consider a binary (two-class) classification problem with a 2-d feature space $\mathcal{X} = [0, 1]^2$, the unit square. Assume that the Bayes decision boundary is a 1-d Lipschitz curve in $[0, 1]^2$. Under this assumption, how many bins would you suggest using for the histogram classifier?
2. Suppose now that $\mathcal{X} = [0, 1]^d$ and that the Bayes decision boundary is a Lipschitz smooth $d - 1$ dimensional manifold in $[0, 1]^d$. How many bins would you suggest?