The University of Texas at Austin
In-Class Work 2

M339G Predictive Analytics

February 26, 2026

K-Nearest Neighbors.

Problem 2.1. (10 points) Explain why standardization is an appropriate preliminary step before we employ the $K-$nearest neighbors procedure.

Problem 2.2. (10 points) You are using $K-$nearest neighbors in a classification problem with X as the explanatory variable and Y as the response. Here are the observed values:

x	1	2	5.5	6.5	9	13
y	1	2	1	1	2	2

Using $K = 3$, figure out the misclassification error.

Problem 2.3. (10 points) You are using $K-$nearest neighbors in a classification problem with $X = (X_1, X_2)$ as predictors and Y as the response. Here are the observed values:

x_1	1	1	2	2
x_2	1	4	2	−1
y	1	2	1	2

Using $K = 3$, figure out how the above points would be classified and the misclassification error. Then, state how you would classify point $(2, 4)$.

Hint: Draw a picture in the plane of (x_{i1}, x_{i2}) for $i = 1, 2, 3, 4$.