CS6690: Pattern Recognition Assignment #2

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Figure 1: Simulation Results

1 Introduction

For a dataset x_i with classes ω_i, Probability of a datapoint belonging to class ω_i is defined as:

$$P(\omega_i|x) = \frac{(P(x|\omega_i)P((\omega_i))}{P(x)} \tag{1}$$

1. Here, $P(x|\omega_i)$ is known as the class likelihood.
   To estimate this value, we require the distribution of ω_i. Based on the central limit theorem, we can assume that this would be Gaussian distribution for large datasets.

2. The value $P(\omega_i)$ is the class prior and is calculated using:

   $$P(\omega_i) = N_i/N \tag{2}$$

   This term becomes irrelevant if the classes have equal probabilities.

3. P(x) is termed as 'evidence' and can be calculated as:

   $$P(x) = \sum_i P(x|\omega_i)P(\omega_i) \tag{3}$$

2 Bayes Classification

2.1 Parameters

2.2 DET Curves

2.3 Decision Boundaries

2.4 Confusion Matrices

3 Cases

3.1 Subsection Heading Here

Write your subsection text here.

4 Conclusion

Write your conclusion here.