

EE E6887 Statistical Pattern Recognition

Homework #3

Due Date: Oct. 12th 2005 Wed. 1pm

Please complete P.1, P.2, and one of the two options of P.3.

P.1 (Property of High-Dimension Space)

In this problem, we continue to explore the property of high-dimension feature space. Assume the training samples are distributed in the unit hypercube in the d-dimensional feature space, R^d . Compute $l_d(p)$, the length of a hypercube edge in d dimensions that contains the fraction p of points ($0 \leq p \leq 1$). To better appreciate the implications of your result, compute $l_5(0.01)$, $l_5(0.1)$, $l_{20}(0.01)$, $l_{20}(0.1)$.

P.2 (Sufficient Statistics)

Textbook DHS Problem 24 of Chapter 3

P.3

Option A:
(EM for missing features)

Textbook DHS Problem 46(a), (b), (c), (d) of Chapter 3

Option B:
(Parzen Window)

Textbook DHS Problem 3(a) and 3(b) of Chapter 4