

Overview of Unit#2: Hypothesis testing

1. Classical Frequentist hypothesis testing. Refs: B&D 4.1,2,3 B&D: 8.3

Background: hypotheses, type 1 and 2 error, level, p-value, power

Major Results:

A) Neyman-Pearson Fundamental Lemma showing that likelihood ratio tests are uniquely MP level α in the simple vs simple case.

B) Stein's Lemma characterizing error exponents in the simple vs simple case as relative entropies. (This is from Cover and Thomas, C12.8)

C) Neyman-Pearson and Sufficiency

D) Uniformly most powerful tests

E) Monotone likelihood ratio