METADATA

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Abstract

This book is aimed at students of Mathematics departments, Applied Mathematics and Statistics departments, as well as those who deal with Statistics and have a good background in Probability Theory. The book is a result of the authors' many years of teaching in the subject of Hypothesis Testing in Parametric Statistics, as well as their involvement with problems in Biology, Geology, Medicine, etc. The first chapter is the introductory chapter. In the second chapter, the basic concepts of hypothesis testing are given. The null hypothesis and the alternative hypothesis, the power function and the types of test statistics (nonrandomized test statistic, uniformly most powerful test statistic, unbiased) are defined. In addition, the fundamental Neyman-Pearson lemma is formulated and proved. The third chapter gives the concept of the property of the monotone likelihood ratio, theorems related to it, as well as theorems concerning uniformly most powerful test statistic. The fourth chapter gives the concept of the generalized likelihood ratio and its asymptotic distribution. The fifth chapter is devoted entirely to the normal distribution. The hypothesis tests, described in the chapter, involve one of two parameters, even when both parameters are unknown. In addition, this chapter compares the parameters of two distributions of independent samples, when they follow normal distribution. The topics analyzed in the sixth chapter of the book are the relationship between confidence intervals and the acceptance region of two-sided hypothesis tests, the comparison of proportions of two independent random samples, hypothesis tests concerning the parameters of the general linear model, and hypothesis testing for the mean values in one-way analysis of variance.