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ABSTRACTS OF PAPERS

(Abstract of a paper presented at the Central Regional meeting, Iowa City, Iowa, April 23–25, 1969. Additional abstracts appeared in earlier issues.)

45. A sequential approach to classification. M. S. SRIVASTAVA, University of Toronto. (Invited)

Let π_i, $i = 0, 1, 2$, denote the three p-variate normal populations with means μ_i and unknown covariance matrix Σ. It is known that $\mu_0 = \mu_i$ for exactly one $i \varepsilon (1, 2)$. On the basis of samples from each population, the problem is to find for which i this is true when the two errors of misclassification are fixed and specified. Since no fixed-sample procedure will meet our requirements, a class of sequential procedures is proposed. It is shown that the average sample size, $EN \leqq C + n_0$, where $[C]$ is the sample size required when Σ is known; $[C]$ is the smallest integer $\geqq C$, and n_0 is a fixed integer $\geqq \frac{1}{3}(p + 4)$. When $\mu_1 - \mu_2$ is known, it is also shown that the cost of not knowing the covariance matrix is some finite number of k observations than prescribed by the sequential rule; k is a positive number which depends only on the specified errors of misclassification, and is independent of μ_1, μ_2, and Σ. (Received 18 August 1969.)

(Abstract of a paper presented at the Western Regional meeting, Monterey, California, May 7–9, 1969. Additional abstracts appeared in earlier issues.)

20. Confidence regions based on transformation models. J. A. HARTIGAN, Yale University. (Invited)

Assume an observation X, a parameter θ, and an error model $E = e(X, \theta)$ where E is a random variable invariant in distribution under the transformations T in a group G. A real valued ordering function ρ is assumed with $P[\rho(E) = \rho(TE)] = 0$ unless T is the identity i. Define $\phi_T(E) = 1$ if $\rho(E) \leqq \rho(TE)$, and $\phi_T(E) = 0$ if $\rho(E) > \rho(TE)$. Then the variables $(\phi_T, T \varepsilon G, T \neq i)$ are *splitting variables*, i.e., the function $\sum \phi_T$ takes the values 0, 1, 2, $\cdots$, N (where N is the number of non-identity transformations in G) each with probability $1/(N + 1)$. For each k, the region $\{\theta \mid \sum \phi_T \leqq k\}$ is a confidence region for θ of size $(k + 1)/(N + 1)$. In order to reduce computational expenditures, a subgroup of the transformation group G, or a randomly selected subset, may be used. (Received 11 August 1969.)

(Abstracts of papers presented at the Annual meeting, New York, New York, August 19–22, 1969. Additional abstracts appeared in earlier issues.)

111. On joint distribution of several nonparametric test statistics (preliminary report). S. G. MOHANTY and C. I. PETROS, McMaster University.

Consider two independent random samples from continuous populations with distribution functions F and G respectively. In order to test $F = G$ against $F \neq G$ or $F > G$ several nonparametric tests such as Kolmogorov–Smirnov test, median test, rank test and Haga test are well known. In this paper, the authors derive the joint distributions of several of these statistics and discuss tests based on the joint distributions. (Received 14 July 1969.)