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THE BEST SAMPLE SIZE IN APPROXIMATING SOME SAMPLING DISTRIBUTIONS

MOHAMMED E. M. GOBAR[1], EIHAB B. M. BASHIER[2] AND ADNAN M. AWAD[3]

[1,2] Department of Mathematics,
Faculty of Science and Arts, Buljurashi,
Al. Baha University, Kingdom of Saudi Arabia
[3] Department of Mathematics,
University of Jordan, 11942, Jordan

Abstract

The Vajda (1973) and Bhattacharyya (1943) information measures are considered as a two different types of information measures, parametric and non-parametric respectively. The Vajda information measure depends on a parameter α under which a family of measure can be derived from. One main objective of this paper is to look for the best range of α and the corresponding range of sample size n under which the random variable belonging to Poisson or binomial distributions can be approximated by a random variable following the normal distribution in the sense of the central limit theorem, and a random variable belonging the Poisson distribution can be approximated by a random variable following the binomial distribution based on the concept of the relative loss in information due to approximation. The same concept of approximating between random variables that belonging to different statistical distributions is applied to Bhattacharyya information measure with the purpose of determining the sample size n for which the relative loss in information measure is less than a given accuracy level ϵ.

Key Words : *Vajda information measures, Bhattacharyya information measures, Parametric and non-parametric information measures, Approximate distribution, Relative loss.*

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