

AKAIKE INFORMATION CRITERION AND SOME DISTRIBUTION APPROXIMATIONS

MOHAMMED E. M. GOBAR¹ AND EI HAB B. M. BASHIER²

^{1,2} Department of Mathematics, Faculty of Science and Arts,
Buljurashi, Al.Baha University, Kingdom of Saudi Arabia

Abstract

Akaike information criterion (AIC) measure is calculated from the approximation of the binomial distribution by either the Poisson or normal distribution and is applied to approximate the Poisson distribution by the normal distribution. This paper introduces the concept of relative loss in information due to the approximation of the distribution of a random variable X_n by the distribution of another random variable Y_n . Then, this concept is used to determine the value of n such that this relative loss in information is less than a given level ϵ . The sample size n is selected to approximate two distributions so that the relative loss in AIC is less than the given value ϵ ; this will guarantee that the relative loss $|(AIC(f_1) - AIC(f_2))/AIC(f_1)|$ in Akaike information criterion due to this approximation is less than ϵ .

Key Words : *Akaike information criterion, Information measure, Relative loss, Approximating distribution.*

2000 AMS Subject Classification : 94A17.

© <http://www.ascent-journals.com>