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Modeling of System Availability and Bayesian Analysis of Bivariate Distribution

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Abstract : To meet the desired standard, it is important to monitor and analyze different engineering processes to get desired output. The bivariate distributions got a lot of attention in recent years to describe the randomness of natural as well as artificial mechanisms. In this article, a bivariate model is constructed using two independent models developed by the nesting approach to study the effect of each component on reliability for better understanding. Further, the Bayes analysis of system availability is studied by considering prior parametric variations in the failure time and repair time distributions. Basic statistical characteristics of marginal distribution, like mean median and quantile function, are discussed. We use inverse Gamma prior to study its frequentist properties by conducting Monte Carlo Markov Chain (MCMC) sampling scheme.

Keywords : reliability, system availability Weibull, inverse Lomax, Monte Carlo Markov Chain, Bayesian
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