A SEAMLESS ALTERNATIVE METHOD TO SIMULATE AN UNKNOWN DISTRIBUTION MULTIVARIATE DATASET

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ABSTRACT

Simulation scholars widely refer to the Cholesky decomposition technique and its derivatives to generate datasets from a given correlation/covariance matrix. Apart from the complexity of this technique, the inaccuracy of the output is a matter of this research. Employing linear integer programming (LIP), we introduce an algorithm to solve a system of linear equations using the sample size, the moment of distribution about the means (mean, variance, skew, and kurtosis), and covariances between the original dataset's variables. We generate a new dataset which its properties and sample size perfectly match the original dataset.