

FINDING THE MOMENTS OF GENERAL QUADRATIC FORM WITH APPLICATION TO DATA CLASSIFICATION

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ABSTRACT

We assume a random sample of size k of general quadratic form has been drawn. We wish to find the first four moments of their more general formula. Later, we use these moments to classify a randomly observed vector to one of the two multivariate normal distributions. We also give out the probability of our decision correctly or incorrectly in this classification. As the concluding remark, we give two real life examples that have been published in literature. Kendall and Stuart [1] discussed the case when $k=2$. Anderson T.W. [2] has a whole chapter 6 discussing the classification of the column vector problem.

Keywords: Characteristic Function, Cumulant Generating Function, Data Classification, First Four Moments, General Quadratic Form, Multivariate Normal Distribution, Real Life Examples.