The performance of mutual information for mixture of bivariate normal disatributions based on robust kernel estimation.

ABSTRACT

Mutual Information (MI) measures the degree of association between variables in nonlinear model as well as linear models. It can also be used to measure the dependency between variables in mixture distribution. The MI is estimated based on the estimated values of the joint density function and the marginal density functions of X and Y. A variety of methods for the estimation of the density function have been recommended. In this paper, we only considered the kernel method to estimate the density function. However, the classical kernel density estimator is not reliable when dealing with mixture density functions which prone to create two distant groups in the data. In this situation a robust kernel density estimator is proposed to acquire a more efficient MI estimate in mixture distribution. The performance of the robust MI is investigated extensively by Monte Carlo simulations. The results of the study offer substantial improvement over the existing techniques.