

The Asymptotic Distribution and Berry-Esseen Bound of a New Test for Independence in High Dimension

Shao Qi-Man, Hong Kong University of Science and Technology, Hong Kong

Let $X_1; X_2; \dots; X_n$ be a random sample from a p -dimensional population distribution. Assume that both p and n are large. To test whether the p -variates of the population are independent, Jiang (2004) uses the largest entry of the sample correlation matrix as a test statistic and the limiting distribution is the extreme distribution of type I. It is known that the rate of convergence to this type of extreme distribution is typically slow, of order of $O(1/\log n)$.

In this talk we will introduce a new test statistic which also has an extreme limiting distribution of type I but with a rate of convergence $O((\log n)^3 / n^{1/2})$. Other related problems will also be discussed. This talk is based on a joint work with W.D. Liu and Z.Y. Lin of Zhejiang University.