

Marginal likelihoods based on sets, with applications to semiparametric copula estimation

Peter Hoff
University of Washington

Often the primary interest of an analysis of multivariate data is in the associations among the variables, and not the scale on which the individual variables are measured. In such situations it is appropriate to analyze the data using a copula model, in which the associations among the variables are parameterized separately from their univariate marginal distributions. For continuous data a likelihood based on the observed ranks can be used to estimate the copula parameters, and the univariate marginal distributions need not be specified or estimated. If the data include discrete ordinal variables, then the rank likelihood must be modified to accommodate the possibility of ties. The resulting "extended rank likelihood" is based upon a subset of the information of the observed data, but is not based on the sampling distribution of a statistic. In this talk we will present an application of the extended rank likelihood, show how parameter estimates can be obtained, and discuss some of its theoretical properties. A few other semiparametric problems will be presented, for which a similar type of likelihood can be used.