THEORY AND APPLICATIONS OF COPULAS

ORGANIZERS: ROGER NELSEN, LEWIS & CLARK COLLEGE, USA, AND V.A. GONZÁLEZ-LÓPEZ, UNIVERSITY OF CAMPINAS, BRAZIL

TALK 1: A P-VARIATE DEPENDENCE TEST BASED ON THE SIZE OF THE LONGEST INCREASING PATH IN A SAMPLE

SPEAKER: JESUS E. GARCIA, UNIVERSITY OF CAMPINAS, BRAZIL

In this work is proposed a new non-parametric test of independence between the coordinates of a p-dimensional random vector. Given a sample of size n of the random vector, the test is based on the size of a longest increasing path in the sample. For two vectors x and y in R^p we will say that x is smaller than y if each coordinate of x is smaller than the same coordinate of y. An increasing path in the sample is a subset of the sample such that for any two vectors x and y in the subset, either x is smaller than y or y is smaller than x. A longest increasing path in the sample is an increasing path of maximum size. It is shown the definition of the new test and its properties are researched through simulations. This is a joint work with V. A. González-López.

TALK 2: A STATISTICAL TOOL FOR MANAGEMENT BASED ON COPULA CONDITIONAL EXPECTATION

SPEAKER: MARIELA FERNÁNDEZ, BM&FBOVESPA, BRAZIL

In practical modeling there are many situations where it is needed to predict the mean performance of a random variable conditioned to a set of values. For example, the study of the average performance of students in a given subject (e.g. calculus I) conditioned on having obtained a score included in a range of values in a related subject (e.g. maths admission test). The cumulative conditional expectation function is a tool for these cases. We explore E[V|U <u] as a function of u in (0,1) in copula model's context. Here we introduce approximations and estimators for the cumulative conditional expectation function based on Bernstein polynomial copulas. The use of these estimators is exemplified through data from educational management. This is a joint work with V. A. González-López.

Talk 3: PAIRWISE AND GLOBAL DEPENDENCE IN TRIVARIATE COPULA MODELS

SPEAKER: ROGER B. NELSEN, LEWIS & CLARK COLLEGE, USA

We investigate whether pairwise dependence properties related to all the bivariate margins of a trivariate copula imply the corresponding trivariate dependence property. The main finding is that, in general, information about the pairwise dependence is not sufficient to infer some aspects of global dependence. In essence, dependence is a multi-facet property that cannot be easily reduced to simplest cases. This is a joint work with F. Durante, J.J. Quesada-Molina and M. Úbeda-Flores.