ΠΑΝΕΠΙΣΤΗΜΙΟ ΙΩΑΝΝΙΝΩΝ

ΤΜΗΜΑ ΜΑΘΗΜΑΤΙΚΩΝ

Εβδομαδιαίο Σεμινάριο

Multi-Panel Kendall Plot Applied to Measuring Dependence

Γεώργιος Αφένδρας

Τμήμα Μαθηματικών, Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης

The Kendall plot (K-plot) is a plot measuring dependence between the components of a bivariate random variable. The K-plot graphs the Kendall distribution function against the distribution function of VU, where V, U are independent $U[0,1]$ random variables. We associate K-plots with the receiver operating characteristic (ROC) curve, a well-accepted graphical tool in biostatistics for evaluating the ability of a biomarker to discriminate between two populations. In parallel with the area under the ROC curve, we propose a novel strategy to measure association between random variables from a continuous bivariate distribution. First, we discuss why the area under the Kendall curve (AUK) cannot be used as an index of dependence. We then suggest a simple and meaningful extension of the definition of the K-plots, and define an index of dependence that is based on AUK. This measure characterizes a wide range of two-variable relationships, thereby completely detecting the underlying dependence structure. Properties of the proposed index satisfy the mathematical definition of a measure. Finally, simulations and real data examples illustrate the applicability of the proposed method.

Τετάρτη 04 Νοεμβρίου 2020, 18:00   Η ομιλία θα γίνει μέσω της πλατφόρμας MSTEAMS