Copula-Based Regression with Discrete Covariates

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Special session:

In this project we investigated a new approach of estimating a regression function based on copulas when covariates are mixture of continuous and discrete variables, which is considered as an extension of Noh et al (2013) context. The main idea behind this approach is the writing of the regression function in terms of copula and marginal distributions, thereafter we estimated the copula and marginal distributions. Now, since various methods are available in the literature to estimate both the copula and the marginals, this approach offered us a rich and flexible alternative to many existing regression estimators. We have studied the asymptotic behavior of the estimators obtained as well as the finite sample performance of the estimators and illustrated their usefulness by analyzing real data. An adapted algorithm is applied to construct copulas. Monte Carlo simulations are carried out to replicate datasets, estimate prediction model parameters and validate them.

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