Clustering and Dependence Modeling for Multidimensional Rating Data

A seminar by Matteo Ventura

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Thursday 23 Apr 2026 | 14:30-15:30

Room BENVENUTI

Department of Statistical Sciences

The analysis of rating data arising from surveys requires models capable of distinguishing the latent components of feeling and uncertainty. This task is effectively addressed by the CUB (Combination of discrete Uniform and shifted Binomial distribution) family of models. However, when dealing with complex surveys, it is necessary to account for multivariate outcomes, unobserved heterogeneity, and dependence structures. This seminar presents the evolution of the CUB framework toward high-dimensional contexts. First, a model-based clustering approach (MLC-CUB) designed to identify latent groups among respondents is introduced. Subsequently, the seminar discusses how to overcome the limits of local independence by integrating copula functions and adopting a Pairwise Likelihood estimation strategy to ensure computational tractability. Finally, the talk explores how to manage model identifiability through the introduction of new distributions for modeling the uncertainty component.

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