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## SEMINARIO

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# Mixture models for ordinal data: a pairwise likelihood approach

**Summary.** A latent Gaussian mixture model to classify ordinal data is proposed. The observed categorical variables are considered as a discretization of an underlying finite mixture of Gaussians. The model is estimated within the expectation-maximization (EM) framework maximizing a pairwise likelihood. This allows us to overcome the computational problems arising in the full maximum likelihood approach due to the evaluation of multidimensional integrals that cannot be written in closed form. Moreover, a method to cluster the observations on the basis of the posterior probabilities in output of the pairwise EM algorithm is suggested. The effectiveness of the proposal is shown comparing the pairwise likelihood approach with the full maximum likelihood and the maximum likelihood for continuous data ignoring the ordinal nature of the variables. The comparison is made by means of a simulation study; applications to real data are also provided.

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**Aula 6 - Palazzo delle Scienze. Corso Italia 55, Catania**

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