

Three-way classification models: An overview

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Abstract

In this paper, I will present an overview of three-way three-mode models that include a clustering of one, two or all three modes involved in the data. First, I will present a brief overview of three-way methods that include a clustering of a single mode only; key distinctions in the overview will be (1) whether, in addition to the clustering of the single mode, the methods do or do not imply a simultaneous dimensional reduction of the other modes, and (2) whether the methods are based on a deterministic or on a stochastic (mixture) model; the contributions of Basford, Hunt, Kroonenberg, Miyano, and Rocci & Vichi (this conference) will be situated in this overview. Second, I will briefly discuss methods that imply a simultaneous classification of two modes; in this regard, I will primarily focus on three-way GENNCLUS and multiple two-way ultrametric tree representations. Third, the core part of the paper will deal with methods that imply a simultaneous classification of all three modes involved in the data. In this regard, existing models (and their interrelations) will be covered, including three-mode hierarchical cluster analysis (Eckes & Orlik, 1994), a three-mode overlapping clustering instance of CANDCLUS (Carroll & Chaturvedi, 1995), and three-way members of the hierarchical classes family (see, e.g., Ceulemans, Van Mechelen, & Leenen, in press; Ceulemans, this conference); in addition, several still to be developed methods that are three-mode extensions of methods of simultaneous two-mode clustering will be pointed at as well.

References

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