Title: Multidimenisional Scaling in R using the package smacof

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This workshop introduces Multidimensional Scaling (MDS; see Borg & Groenen, 2005) in R using the smacof package (de Leeuw & Mair, 2009). SMACOF is an MDS technique that minimizes the "stress" target function by means of the Majorization algorithm. The smacof package implements the following MDS techniques: simple SMACOF on symmetric dissimilarity matrices, SMACOF with restrictions on the configurations, three-way SMACOF for individual differences (INDSCAL, IDIOSCAL, etc.), rectangular SMACOF (unfolding), spherical SMACOF, in a metric as well as nonmetric manner. In this workshop we give the basic theory of these models and demonstrate, how these models can be computed in R. We also focus on graphical representations of the results by means of 2D and 3D configuration plots, Shepard diagrams, residual plots, and stress decomposition charts. For the applications we will use real-life data from different fields of research.

References:

Borg, I., Groenen P. J. F. (2005). Modern Multidimensional Scaling: Theory and Applications. Springer, New York, 2nd edition.

de Leeuw, J., & Mair, P. (2009). Multidimensional scaling using majorization: SMACOF in R. Journal of Statistical Software, 31(3), 1-30. URL:http://www.jstatsoft.org/v31/i03/