

# A comparison of four methods for sliced inverse regression of interval-valued data

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## Abstract

Sliced inverse regression (SIR) was introduced by Li (1991) to find the effective dimension reduction directions for exploring the intrinsic structure of high-dimensional data. For univariate response regression, SIR has been extended and applied to different data types. Examples were the cases of the survival data, the time series data, the functional data and the longitudinal data. This study intends to develop SIR for the interval-valued data. Four approaches are considered to be compared. There are the vertices method (VM), the centers method (CM), the midpoint and range method (CRM), and the symbolic covariance method (SCM). We evaluated the results with those obtained with the symbolic principal component analysis for the low-dimensional discriminative and visualization purposes by means of a simulation study and by an application to an empirical data set.

Keywords: data visualization, sufficient dimension reduction, symbolic data analysis, symbolic principal component analysis