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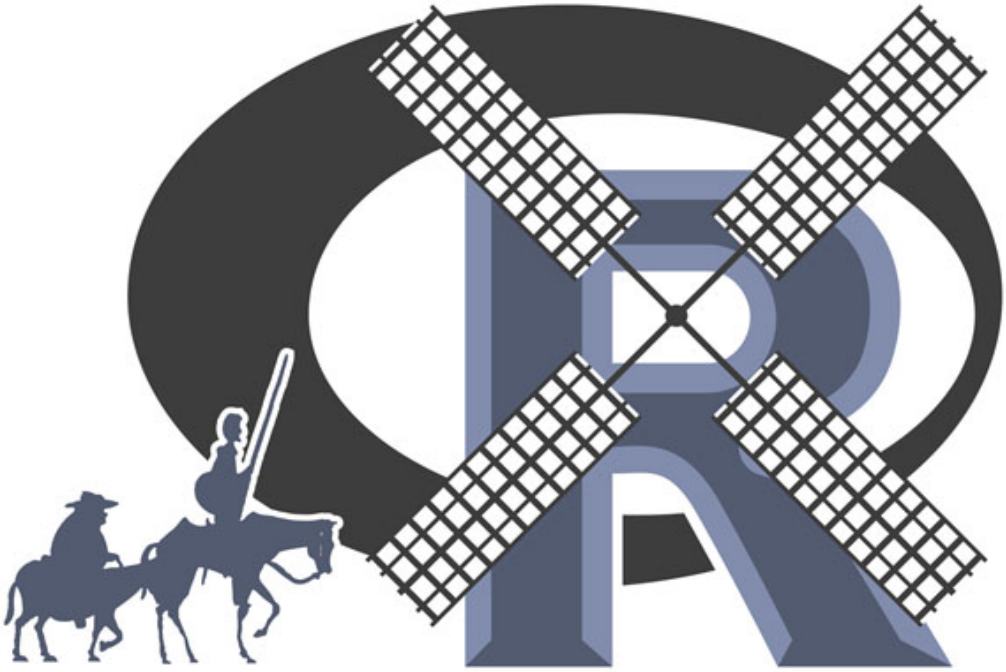

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Classifying High-Dimensional Data with the The HiDimDA package

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Classical methods of supervised classification often assume the existence of a training data set with more observations than variables. However, nowadays many applications work with data bases where the total number of original features is much larger than the number of available data units. Nevertheless, in most high-dimensional classification problems the majority of the original variables do not contribute to distinguish the underlying classes, but the number of useful features is often still comparable to, or even larger than, the number of available training sample observations.

Therefore, effective classification methodologies for these applications require scalable methodologies of variable selection, and classification rules that work well in the few observations / many variables settings. A common strategy to achieve the later goal is to adopt rules that ignore the dependence structure of the data (*e.g,*. Fan and Fan (2008)). Recent proposals (*e.g.*, Thomaz, Kitani, and Gilies (2005), Fisher and Sun (2011), Duarte Silva (2011)) rely instead on rules based on estimators of covariance matrices with good statistical properties under such conditions.

In this presentation, I will describe the **HiDimDA** (*High Dimensional Discriminant Analysis*) *R* package, available on CRAN, that implements several routines and utilities for supervised *k*-group classification in high-dimensional settings. **HiDimDA** includes routines for the construction of classification rules with the above mentioned properties, methods for predicting new observations, as well as cross-validation and variable selection utilities.

HiDimDA can be used to construct, apply and assess k-group classification rules for problems with several thousand variables, dealing effectively with the problems of high dimensionality, and including rules that do not ignore the dependence structure of the data.

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