

## Graphical Analysis of High-Dimensional Classifiers

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### Abstract

Modern algorithmic classification methods such as trees, forests, and neural networks tend to share two common traits. They can often have far greater predictive power than classical model-based methods. And they are frequently so complex as to make interpretation difficult, often leading to a “black box” appearance. We propose a graphical tool to facilitate investigation of the inner workings of such classifiers. Expansion of the ideas of the data image of Minnotte and West (1999) and the color histogram of Wegman (1990) allows simultaneous examination of dozens to hundreds of variables across similar numbers of observations. Additional information can be visually incorporated as to true class, predicted class, and casewise variable importance. Careful choice of orderings across cases and variables can clearly indicate clusters, irrelevant or redundant variables, and other features of the classifier, leading to substantial improvements in interpretation of both classifier mechanisms and the underlying relationships of class and feature variables in nature.