Editorial

This issue is opened by Vrbik and McNicholas' novel method, termed "fractionally-supervised classification", allowing for a method that bridges the full range between unsupervised (e.g., cluster analysis and related methods) and supervised learning (e.g., discriminant analysis and related methods) and generalizes the traditionally used semi-supervised learning. Furthermore, I am very pleased to note that this paper is based on the work of 2015 Classification Award Winning Dissertation by the first author, Irene Vrbik.

The second paper by Al-Ibrahim introduces a semi-definite programming (SDP) method for analyzing general, multivariate data with a focus on two popular methods for data reduction: principal component analysis and factor analysis. Al-Ibrahim shows that the SDP approach can perform the role of the "workhorse" and assist in such decisions as choosing the number of components/factors, variable selection, and sensitivity analysis. However, the most interesting contribution is in introducing Sign PCA as a way to circumvent the classic lack of scale invariance that exists in traditional principal components analysis.

Following this general paper, Kovaleva and Mirkin began a set of three papers utilizing non-hierarchical clustering. The first of the three papers embeds the classic non-hierarchical clustering technique of K-means clustering in the context of hierarchical clustering to create a least squares approach to divisive clustering. As it stands, this framework encompasses two of the more popular methods for divisive clustering, providing unification in an emerging area of cluster analysis.

The fourth paper in the issue, by Brusco and Steinley (note that the entire review process for this article was handled by Dr. Willem Heiser), demonstrate that the popular affinity propagation algorithm has been mischaracterized as a p-median cluster model. Rather, they show that affinity propagation is a special case of "simple plant location problem" and go on to offer both an exact method and a heuristic procedure for solving the problem.

The fifth paper is yet another paper by Brusco, this time with Doreian as a coauthor. Once again he offers an exact algorithm for clustering, this time in context of two-mode partitioning—a common structure seen in modern social network analysis. While the traditional approach for the clustering algorithm is to provide a modified version of K-means clustering, Brusco and Doreian offer a branch-and-bound programming algorithm that can solve this class of problems optimally.

The final paper has Silva and Brito introducing a method for conducting discriminant analysis on interval data. For these types of data, the authors show that under several scenarios parametric classification rules outperform more "classic" formulations based on distances.

Douglas Steinley