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Dear Editors,

Please consider our article entitled ``Supervised Tensor Decomposition with Interactive Side Information'' for publication in JASA – Applications and Case Studies.

In this manuscript, we develop and apply a tensor decomposition method that incorporates multiple side information as interactive features. Higher-order tensors have received increased attention across science and engineering. While most tensor decomposition methods are developed for a single tensor observation, scientific studies often collect side information, in the form of node features and interactions thereof, together with the tensor data. Such data problems are common in neuroimaging, network analysis, and spatial-temporal modeling. Identifying the relationship between a high-dimensional tensor and side information is important yet challenging.

We present a general model and associated method for decomposing a data tensor whose entries are from exponential family with interactive side information. Our supervised decomposition captures the effective dimension reduction of the data tensor confined to feature space on each mode. Our proposal handles a broad range of data types, including continuous, count, and binary observations. We apply the method to diffusion tensor imaging data from human connectome project and multi-relational political network data. Our approach has led to exciting findings of global connectivity pattern and local regions that are associated with available features.

Our method will help the practitioners efficiently analyze tensor datasets in various areas. Toward this end, the package and data used are available at https://CRAN.R-project.org/package=tensorregress.

We believe our results will be of interest to a very broad readership -- from those interested in new statistical techniques in tensor data to those in neuroimaging and social network analysis. We appreciate your consideration.

Sincerely,

Miaoyan Wang,
Assistant Professor of Statistics
University of Wisconsin-Madison