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**Mingwei Sun\*** (msun1@samford.edu). *A Principle Weighted Penalized Regression Model and its Application.*

A new principle weighted penalized regression model which can be used for reducing the dimensionality of large data without losing important information is introduced. It retains the favorable features of the principal component analysis (PCA) technique and penalized regression models. The new model weighs the variables in a large data set based on their contributions to key principle components obtained by PCA, which improves its ability to discover hidden correlated variables, and does variable selection and regression coefficients estimation simultaneously via regularization methods. An application of the proposed model on high-dimensional economic data is studied. The results of comparative studies show that the new model outperforms the competitors with significantly smaller fitting and prediction errors. The resulting model presents high accuracy and is easy to interpret. (Received September 21, 2021)