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Collinearity: revisiting the variance inflation factor in ridge regression

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Abstract

Ridge regression has been widely applied to estimate under collinearity by defining a class of estimators that are dependent on the parameter k. The variance inflation factor (VIF) is applied to detect the presence of collinearity and also as an objective method to obtain the value of k in ridge regression. Contrarily to the definition of the VIF, the expressions traditionally applied in ridge regression do not necessarily lead to values of VIFs equal to or greater than 1. This work presents an alternative expression to calculate the VIF in ridge regression that satisfies the aforementioned condition and also presents other interesting properties.

Keywords:

collinearity | ridge regression | variance inflation factor | linear regression | covariance matrix

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