THE BMM-ESTIMATOR IN AR-2D MODELS: A COMPLETE STUDY

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ABSTRACT:

In this work, we present the BMM 2D estimator, a robust estimator for the parameters of the bidimensional autoregressive model (AR-2D model). The new estimator is a two-dimensional extension of the BMM estimator for the parameters of the autoregressive models used in time series analysis. We demonstrate that the BMM 2D estimator is consistent and asymptotically normal, which provides a valuable tool to carry out inferential studies about the parameters of the AR-2D model. We compare its performance with existing estimators through a Monte Carlo study, considering different levels of additive contamination and window sizes. The results show that the new estimator competes successfully with the other methods, both in accuracy and precision. In the context of image restoration problems, we illustrate the performance of the BMM 2D estimator compared with the least squares estimator.