

Fourier Transform Approach for Inverse Dimension Reduction Method

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Abstract: Estimating an inverse regression space is especially important in sufficient dimension reduction. However, it typically requires a tuning parameter, such as the number of slices in a slicing method or bandwidth selection in a kernel estimation approach. Such a requirement not only affects the accuracy of estimates in a finite sample, but also increases difficulties for multivariate models. In this paper, we use a Fourier transform approach to avoid such difficulties and incorporate multivariate models. We further develop a Fourier transform approach to deal with variable selection, categorical predictor variables, and large p , small n data. To test the dimension, asymptotic results are obtained. Simulation studies and data analysis show the efficacy of our proposed methods.