Physics > Data Analysis, Statistics and Probability

Nonparametric Regression using the Concept of Minimum Energy

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It has recently been shown that an unbinned distance-based statistic, the energy, can be used to construct an extremely powerful nonparametric multivariate two sample goodness-of-fit test. An extension to this method that makes it possible to perform nonparametric regression using multiple multivariate data sets is presented in this paper. The technique, which is based on the concept of minimizing the energy of the system, permits determination of parameters of interest without the need for parametric expressions of the parent distributions of the data sets. The application and performance of this new method is discussed in the context of some simple example analyses.

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