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ABSTRACT

We consider the problem of locating jumps in regression surfaces. A jump detection algorithm is suggested based on local least squares estimation. This method requires $O(Nk)$ computations, where N is the sample size and k is the window width of the neighborhood. This property makes it possible to handle large data sets. The conditions imposed on the jump location curves, the jump surfaces and the noise are mild. We demonstrate this method in detail with some numerical examples.

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Key Words: Jump surfaces, Jump location curves, Least squares plane, Slopes, Jump detection criterion, Threshold value, Modification procedure, Image processing.