Kuchibhatla, Maragatha; **Hart, Jeffrey D.**
Smoothing-based lack-of-fit tests: Variations on a theme. (English) Zbl 0877.62041
J. Nonparametric Stat. 7, No. 1, 1-22 (1996).

Summary: In recent years a number of authors have studied lack-of-fit tests that make use of nonparametric smoothing ideas. Some of these tests, such as those proposed by *R. L. Eubank* and *J. D. Hart* [Ann. Stat. 20, No. 3, 1412-1425 (1992; Zbl 0776.62045)] utilize data-driven smoothing parameters as test statistics. In this paper variations and alternative forms of the Eubank-Hart test are explored. The tests considered are based upon trigonometric series regression estimators whose smoothing parameter is the point at which the series is truncated. It is shown that one variation based on an L_2 discrepancy measure is exceptionally powerful in detecting high frequency departures from the hypothesized regression model.

The tests are shown to be applicable in both fixed- and random-design regression problems. A convenient graphical means of describing the results of one of our tests is illustrated by example, and a simulation study compares the proposed tests to some existing ones.

MSC:

62G10 Nonparametric hypothesis testing
62G07 Density estimation

Keywords:

parametric models; nonparametric regression; Fourier series; automated smoothing

Full Text: DOI

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