LeBlanc, Michael; Tibshirani, Robert

Adaptive principal surfaces. (English) [Zbl 0795.62057]

Summary: We develop a nonlinear generalization of principal components analysis. A principal surface of the data is constructed adaptively, using some ideas from the MARS procedure of J. H. Friedman [Ann. Stat. 19, No. 1, 1-141 (1991; Zbl 0765.62064)]. We explore applications to curve and surface reconstruction and to data summarization.

MSC:
62H25 Factor analysis and principal components; correspondence analysis
65C99 Probabilistic methods, stochastic differential equations
65D10 Numerical smoothing, curve fitting
65D07 Numerical computation using splines

Keywords:
multivariate adaptive regression splines; nonlinear generalization of principal components analysis; principal surface; MARS procedure; curve and surface reconstruction; data summarization

Full Text: DOI