

the modified basis function are not understood. Do they approximate with the same power as linear splines? Surely they not do as well as quadratic ones. My next remark relates to the basis functions being used. As noted in Section 3.9, the one-sided truncated power basis is well known to be very badly conditioned whereas the classical B-splines are very well-conditioned. Why not use the latter? Updating might even be easier.

The idea of simplifying the model by removing knots (recombining pieces) strikes me as very important. This idea has recently been discovered by approximation theorists in connection with general spline fitting. The papers [8]–[10] are representative.

REFERENCES

- [1] BIRMAN, M. S. and SOLOMIAK, M. E. (1966). Approximation of the functions of the classes W_p^α by piecewise polynomial functions. *Soviet Math. Dokl.* **7** 1573–1577.
- [2] BRUDNYI, JU. A. (1971). Piecewise polynomial approximation and local approximations. *Soviet Math. Dokl.* **12** 1591–1594.
- [3] DE BOOR, C. and RICE, J. R. (1979). An adaptive algorithm for multivariate approximation giving optimal convergence rates. *J. Approx. Theory* **25** 337–359.
- [4] DEVORE, R. A. and POPOV, V. A. (1987). Free multivariate splines. *Constructive Approx.* **3** 239–248.
- [5] FRANKE, R. and SCHUMAKER, L. L. (1987). A bibliography of multivariate approximation. In *Topics in Multivariate Approximation* (C. K. Chui, L. L. Schumaker and F. Utreras, eds.) 275–335. Academic, New York.
- [6] LIGHT, W. A. and CHENEY, E. W. (1985). *Approximation Theory in Tensor Product Spaces. Lecture Notes in Math.* **1169**. Springer, New York.
- [7] LIGHT, W. A. and CHENEY, E. W. (1989). On the approximation of a bivariate function by the sum of univariate functions. *J. Approx. Theory* **29** 305–322.
- [8] LYCHE, T. and MØRKEN, K. (1987). Knot removal for parametric B-spline curves and surfaces. *Computer-Aided Geometric Design* **4** 217–230.
- [9] LYCHE, T. and MØRKEN, K. (1987). A discrete approach to knot removal and degree reduction algorithms for splines. In *Algorithms for Approximation* (J. C. Mason and M. G. Cox, eds.) 67–82. Oxford Univ. Press, New York.
- [10] LYCHE, T. and MØRKEN, K. (1988). A data reduction strategy for splines. *J. Numer. Anal.* **8** 185–208.
- [11] POPOV, V. (1989). Nonlinear multivariate approximation. In *Approximation Theory VI* (C. K. Chui, L. L. Schumaker and J. D. Ward, eds.) 519–560. Academic, Boston.

DEPARTMENT OF MATHEMATICS
VANDERBILT UNIVERSITY
NASHVILLE, TENNESSEE 37240

CHARLES J. STONE

University of California, Berkeley

This pioneering paper successfully combines creative breakthroughs (especially, *not* removing the parent basis function) with numerous techniques developed over the years by the author and his collaborators and others