82 DISCUSSION

goals, the former can have noticeable impact on the latter. For the model selected by MDL, the value of GCV = 0.16 is a reasonably good estimate of CV = 0.17; whereas, for the model selected by GCV, the minimum GCV value of 0.15 does not give as good an estimate of the corresponding CV = 0.22.

REFERENCES

- Barron, A. R. (1984). The predicted squared error: A criterion for automatic model selection. In Self-Organizing Methods in Modeling (S. J. Farlow, ed.) 87-103. Dekker, New York.
- Barron, A. R. (1989). Statistical properties of artificial neural networks. *Proc. Twenty-eighth Conf. on Decision and Control*. IEEE, New York.
- Barron, A. R. (1990). Complexity regularization. Proc. NATO Advanced Study Inst. Nonparametric Funct. Estimation Related Topics. Kluwer, Boston.
- BARRON, A. R. and BARRON, R. L. (1988). Statistical learning networks: a unifying view. Computing Science and Statistics: Proc. Twentieth Symp. on the Interface (E. J. Wegman, D. T. Gantz and J. J. Miller, eds.) 192–203. Amer. Statist. Assoc., Alexandria, Va.
- Barron, A. R. and Cover, T. M. (1990). Minimum complexity density estimation. *IEEE Trans. Inform. Theory.* To appear.
- BARRON, R. L., MUCCIARDI, A. N., COOK, F. J., CRAIG, J. N. and BARRON, A. R. (1984). Adaptive learning networks: Development and application in the United States of algorithms related to GMDH. In *Self-Organizing Methods in Modeling* (S. J. Farlow, ed.) 25–65. Dekker, New York.
- COVER, T. M. (1974). The best two independent measurements are not the two best. *IEEE Trans. Systems Man Cybernet.* 4 116–117.
- Cox, D. D. (1988). Approximation of least squares regression on nested subspaces. Ann. Statist. 16 713-732.
- Eubank, R. L. (1988). Spline Smoothing and Nonparametric Regression. Dekker, New York.
- FRIEDMAN, J. H. (1991). Multivariate adaptive regression splines. Ann. Statist. 19 1-67.
- JONES, L. (1990). A simple lemma on iterative sequences in Hilbert space and convergence rates for projection pursuit regression. Technical report 16, Dept. Math., Univ. Lowell, Lowell, Mass.
- Li, K.-C. (1987). Asymptotic optimality for C_p , C_L , cross-validation; Discrete index set. Ann. Statist. 15 958–975.
- RISSANEN, Y. (1983). A universal prior for integers and estimation by minimum description length.

 Ann. Statist. 11 416-431.
- SCHUMAKER, L. L. (1981). Spline Functions: Basic Theory. Wiley, New York.
- Schwarz, G. (1978). Estimating the dimension of a model. Ann. Statist. 6 461-464.
- Sheu, C.-H. (1989). Density estimation with Kullback-Leibler loss. Ph.D. dissertation. Dept. Statist., Univ. Illinois.
- Shibata, R. (1981). An optimal selection of regression variables. Biometrika 68 45-54.

DEPARTMENT OF STATISTICS UNIVERSITY OF ILLINOIS 725 SOUTH WRIGHT STREET CHAMPAIGN, ILLINOIS 61820

LEO BREIMAN

University of California, Berkeley

This is an exciting piece of methodology. The highest compliment I can pay is to express my feeling that "I wish I had thought of it." The basic idea is