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New estimation and variable selection method in mixture-of-experts models

We study estimation and variable selection problems in mixture-of-experts (MOE) models. A new modified maximum likelihood estimation (MMLE) method is proposed. It is shown that the MMLE is root- n consistent, and simulations indicate its better finite sample behavior compared to the ordinary MLE. For variable selection, we apply two penalty functions to the modified likelihood. The method is computationally efficient, and theoretically it is shown to be consistent in variable selection. Two Bayesian information criteria are suggested for data adaptive choice of tuning parameters. A modified EM-Newton-Raphson algorithm is developed for numerical computations. The performance of the method is also studied through simulations. A real data analysis is presented.