Journal of Systems Science and Complexity 1992 5 (3): 239-250 ISSN: 1000-0577 CN: 11-2019/O1

论文

OPTIMAL RATE OF CONVERGENCE FOR ESTIMATORS IN THE NONPARAMETRIC MEDIAN MODEL

ZHENG Zhongguo

Peking University,Beijing 100871,China

收稿日期 修回日期 网络版发布日期 接受日期

摘要 Let (Y,X) be a random vector with its value in R~1×R~d,d\le 1. Let \Theta be the collection of real valued functions θ(x) on R~d which is p times differ-entiable at x=0 and p-1 times differentiable on an open neighborhood U of the origin of R~d. The conditional distribution of Y is assumed to be of the form of f(y|x,θ(x))dy where θ(x)∈\Theta is called the parameter of the family. (Y,X) is called a nonparametric median model if furthermore the conditional median of Y given X=x is θ(x). In this paper, the optimal rate of convergence for estimators of T(θ)=θ(0)is discussed. Under certain conditions, it is proved that for the nonparametric median model the optimal rate of convergence is r=p/(2p+d). A sequence of estimators, which is asymptotically normal with the optimal rate of covergence, is constructed.

关键词 Optimal rate of convergence,nonparametri

分类号

OPTIMAL RATE OF CONVERGENCE FOR ESTIMATORS IN THE NONPARAMETRIC MEDIAN MODEL

ZHENG Zhongguo

Peking University,Beijing 100871,China

Abstract Let (Y,X) be a random vector with its value in R~1×R~d,d\le 1. Let \Theta be the collection of real valued functions θ(x) on R~d which is p times differ-entiable at x=0 and p-1 times differentiable on an open neighborhood U of the origin of R~d. The conditional distribution of Y is assumed to be of the form of f(y|x,θ(x))dy where θ(x)∈\Theta is called the parameter of the family. (Y,X) is called a nonparametric median model if furthermore the conditional median of Y given X=x is θ(x). In this paper, the optimal rate of convergence for estimators of T(θ)=θ(0)is discussed. Under certain conditions, it is proved that for the nonparametric median model the optimal rate of convergence is r=p/(2p+d). A sequence of estimators, which is asymptotically normal with the optimal rate of covergence, is constructed.

Key words Optimal rate of convergence nonparametric median model

DOI:

通讯作者