密度函数估计的修正SVM法

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Modified SVM in the estimation of density function

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全文: PDF (643 KB)   HTML (KB)   输出: BibTeX | EndNote (RIS)   背景资料

摘要 讨论密度函数的非参数估计问题,提出了一种修正的支持向量机(SupportVectorMachines,简记为SVM)方法,修正SVM法是在SVM方法的基础上进行简单改进而得到的,它是基于概率理论的概率大的事件其对应的样本数目会比概率小的事件的对应的样本数目多一些这一先验性质而产生的,这样估计的函数能更好地近似真正的密度函数.同时,由于密度函数的估计问题是不适定的,文中密度函数估计采用了正则化技术处理这一估计问题,最后通过一模拟实验,表明采用修正SVM法比采用SVM法进行密度函数估计能更好地逼近真实密度函数.

关键词: 密度估计   支持向量机   修正SVM   正则化   统计学习

Abstract: A modified Support Vector Machines (Modified SVM) for non-parametric estimation of density function,which is a modified version of Support Vector Machines (SVM) for non-parametric estimation of density function,is discussed.This procedure is based on the prior knowledge that the probability of any event decides the number of samples which indicate the happening of that event in probability theory,specifically,the larger probability of an event,the more number of samples which imply the happening of that event.A better outcome is obtained by Modified SVM than that by SVM in the simulation.What's more,since the problem of the estimation of density function is ill-posed,the regularization method is adopted.

Key words: density estimation   Support Vector Machines   modified Support Vector Machines   regularization statistical learning

引用本文:

彭新俊,胡光华. 密度函数估计的修正SVM法[J]. 云南大学学报(自然科学版), 2004, 26(4): 284-287.

PENG Xin-jun,HU Guang-hua. Modified SVM in the estimation of density function[J]. , 2004, 26(4): 284-287.

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