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论文

支撑矢量预选取的双色Voronoi图方法

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摘要
支撑矢量机是在统计学习理论的基础上发展出来的一种新的模式识别方法，在解决小样本、非线性及高维模式识别问题中表现出许多特有的优势，在支撑矢量机中，支撑矢量的选取相当困难,成为其应用的瓶颈问题。该文利用Voronoi图在特征空间特有的构造特性，提出了一种预先选取支撑矢量的新方法——双色Voronoi图方法。该方法针对数据在空间的分布特性，在训练支撑矢量机以前，利用样本数据的双色Voronoi图确定候选的支撑矢量，然后在这些预选的矢量上进行学习。试验证明了该方法的有效性及可行性。

关键词 支撑矢量机 Voronoi图 双色Voronoi图 边界矢量 支撑矢量

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Pre-extracting support vector for support vector maching using bi-color voronoi diagrams

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Abstract
Support Vector Machines (SVMs) are a new generation learning system based on recent advances in statistical learning theory. SVMs have many well features that make them attractive for small samples, nonlinear and high dimensional pattern recognition. However, choice of Support Vectors(SVs) is difficult in SVMs, which is a bottleneck problem. In this paper, a novel method using bi-color Voronoi diagram is proposed to pre-extract SVs based on Voronoi diagram. Considering the distribution feature of samples space, this method determi-nates SVs based on the bi-color Voronoi diagram before training SVMs. Learning is based on these pre-extracted vectors. Experiments show that this method is feasible and effective.

Key words Support vector machine Voronoi diagrams Bi-color Voronoi diagrams Margin vector Support vector

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