

基于改进烟花算法的 SVM 特征选择和参数优化

沈永良, 宋杰, 万志超

(安徽大学 计算机科学与技术学院, 安徽 合肥 230601)

摘要: 本文提出了一种改进的基于烟花算法的 SVM 特征选择和参数优化算法.该算法针对特征选择问题的 0-1 特性,使用二进制编码的烟花算法,采用基于 RBF 核函数的 SVM,在选取尽可能少的特征数目的同时提高了分类准确率.通过 UCI 数据仿真,对比结果表明:该方法避免了过早成熟而陷入局部最优的问题,可有效地找出合适的特征子集及 SVM 参数,并取得较好的分类效果.

关键词: 二进制编码; 烟花算法; 特征选择; 参数优化

Improved Fireworks Algorithm for Support Vector Machine Feature Selection and Parameters Optimization

SHEN Yong-liang, SONG Jie, WAN Zhi-chao

(School of Computer Science and Technology, Anhui University, Hefei Anhui 230601, China)

Abstract: In this paper, we propose a Fireworks Algorithm based method to improve the performance of feature selection and parameters optimization in training SVM. For the 0-1 characteristic of feature selection, the binary coding Fireworks Algorithm and RBF kernel function based SVM are used to improve the accuracy of classification with less features. Compared to previous works, the proposed method can avoid being mature and falling into a local value, and it can effectively find the appropriate feature subset and parameters to get better performance of classification in UCI dataset.

Key words: binary encoding; fireworks algorithm; feature selection; parameters optimization

作者简介:

沈永良 男, (1992-), 硕士研究生.研究方向为嵌入式系统智能计算.E-mail:syl296022756@qq.com.

宋杰 男, (1966-), 博士研究生, 副教授.研究方向为嵌入式系统、智能计算、生物信息.

万志超 男, (1991-), 硕士研究生.研究方向为嵌入式系统、智能计算.