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图形、图像、模式识别

改进的PSO在说话人辨识中的应用

骆瑞玲[1，2]，李 明[2]，李 睿[2]

1.石河子大学 信息科学与技术学院，新疆 石河子 832000
2.兰州理工大学 计算机与通信学院，兰州 730050

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摘要 针对PSO算法容易陷于局部极值的缺点，提出了一种改进的PSO优化算法（IPSO）。该算法根据粒子进化速度对粒子个体极值进行自适应扰动，使粒子及时跳出局部极值点而继续优化，从而扩大粒子搜索范围。改进后的PSO算法加快了收敛速度，能够很好地调整算法的全局与局部搜索能力之间的平衡。同时，给出了应用IPSO算法训练支持向量机的方法，并将其应用于说话人辨识。改进后的PSO可以使SVM用较少的SV取得最优分类面，从而减少SVM的训练量，提高了说话人辨识速度。

关键词 说话人辨识 粒子群优化算法 速度进化因子 极值扰动

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Application of improved PSO in speaker identification

LUO Rui-ling[1，2]，LI Ming[2]，LI Rui[2]

1.College of Information Science and Technology，Shihezi University，Shihezi，Xinjiang 832000，China
2.School of Computer and Communication，Lanzhou University of Technology，Lanzhou 730050，China

Abstract

Aiming at the shortcoming of Particle Swam Optimization（PSO） which is easily relapsing into local extremum，an improved PSO is proposed in this paper.This approach applies the evolution speed factor as the Trigger conditions to stochastically disturb the local optimal solution.The improved PSO algorithm can not only improve extraordinarily the convergence velocity in the evolutionary optimization，but also can adjust the balance between global and local exploration suitably.Then a speaker identification approach using this improved algorithm to train SVM is presented.The SVM can receive the optimal hyper plane with less support vectors by the improved PSO，and then the training samples are reduced and the identification speed is improved.

Key words speaker identification Particle Swam Optimization（PSO） evolution speed factor extremum disturbance

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通讯作者 骆瑞玲 lrl_inf@shzu.edu.cn