抗遮挡的鸡群优化粒子滤波目标跟踪方法

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摘　要：针对遮挡情况下粒子滤波算法因粒子贫化而导致目标跟踪精度下降的问题，提出一种抗遮挡的鸡群优化粒子滤波跟踪方法.首先将粒子权值作为适应度来确定粒子的种类及关系，通过不同类型粒子的移动机制来完成位置更新；然后引入线性递减权重策略和向种群中最优个体学习部分来克服鸡群优化局部最优问题，并选择似然函数值最大的区域作为目标；最后，采用模板更新来继续遮挡情况下的跟踪.理论分析和实验结果表明，该算法相比于基本鸡群优化粒子滤波和粒子滤波跟踪方法，对遮挡目标具有良好的鲁棒性且跟踪精度较高.

关键词：目标跟踪；粒子滤波；鸡群优化算法；抗遮挡

Anti-occlusion particle filter target tracking method based on chicken swarm optimization

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Abstract：In order to solve the poor target tracking accuracy problem caused by particle impoverishment in particle filter (PF) algorithm under the occlusion condition, an Anti-occlusion Chicken Swarm Optimization-based particle filter target tracking method is proposed . Firstly, the weight of particles is as the fitness and the type of each particle in the population and interrelation among particles is determined, and various movement mechanism of different types of particles are introduced to update the position. Then individual learning for food are adjusted through linear decrementing weight strategy and guided by the optimal individual of the population to overcome local optimal problems, and we define the area which has the biggest likelihood function value as the target. Finally, the tracking is continued by the updating templates under the occlusion condition. Theoretical analysis and experimental results show that the proposed algorithm has better robustness and higher tracking accuracy for occlusion targets than the chicken swarm optimization-based particle filter (CSO-PF) and the particle filter tracking methods.

Key words：target tracking; particle filter; chicken swarm optimization; anti-occlusion

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