

### 一种基于生物地理优化的快速运动估计算法

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## A Biogeography-based Optimization Algorithm for Fast Motion Estimation

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摘要

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**摘要** 为了提高视频编码中运动估计的性能, 该文提出了一种新的基于生物地理优化的快速运动估计算法。该算法以运动矢量的特性为基础, 通过生物地理优化算法的迁徙和变异操作搜索全局最优解, 克服了以往快速搜索算法容易陷入局部最优的缺点, 同时采用了早期和迭代终止策略, 进一步简化运算复杂度。实验表明, 该算法的整体性能高于以往快速搜索算法, 可以有效兼顾搜索精度和速度的要求。由于实现简单和适用面广, 该算法能满足实时视频编码的需求。

**关键词:** 运动估计 视频编码 生物地理优化 块匹配 全局优化

**Abstract:** In order to improve the performance of motion estimation in video encoding, a biogeography-based optimization algorithm is proposed for fast motion estimation. Based on the characteristic of motion vector, the method used the migration and mutation of Biogeography-Based Optimization (BBO) to search global optimum and overcame the shortcoming of falling into local optimum in existing fast block-matching algorithms. Meanwhile, it adopted early and iterative termination strategy to further simplify computational complexity. Experimental results show that it has higher efficiency than the existing fast algorithms in terms of search accuracy and speed. Because of simple and practicality, it is feasible for real-time video encoding.

**Keywords:** Motion estimation Video encoding Biogeography-Based Optimization (BBO) Block matching Optimization

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