基于属性特征提取与萤火虫优化的图像检索算法

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摘　要：为了解决图像检索算法中存在的语义鸿沟问题，并提高图像检索性能，本文提出了基于属性特征提取耦合萤火虫优化的图像检索技术.首先，基于像素聚类特性，利用归一化分割模型将每个图像分割成不同的区域，并提取每个区域的颜色和纹理特征；然后，引入 Earth Mover's distance（EMD）相似度量，计算搜索目标与图像库中目标的距离，从而获得查询目标的反馈结果；再通过支持向量机（Support Vector Machine，SVM）对获得的图像反馈结果进行学习，并引入萤火虫算法进行迭代优化，对相关图像和不相关图像进行持续筛选，从而获得用户期望结果.通过在 Corel 图像库中实验证明：与当前常用的图像检索算法相比，本文算法具有更高查准率和查全率，以及更低的平均归一化检索率与复杂度，能准确快速地查找搜索目标.

关键词：图像检索；语义鸿沟；区域分割；萤火虫算法；属性特征；EMD；支持向量机

The Image Retrieval Based on Attribute Feature Extraction Coupled Firefly Optimization

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Abstract：In order to solve the problem of semantic gap in image retrieval algorithm ,and improve the performance of image retrieval, proposed a Image retrieval based on the optimization of regional segmentation coupled firefly algorithm .Firstly, based on the characteristics of pixel clustering ,each image was segmented into different regions and the color and texture features were extracted by using the normalized segmentation model ;Then, the Mover's distance Earth (EMD) criterion was introduced to calculate the distance between the query image and the database image ,get the feedback from the nearest image and the user's request ;Then through the SVM to get the image feedback information for classification and learning, and the introduction of firefly algorithm for iterative optimization，Through continuous iteration, relevant and not related to the continuous image filtering, so as to obtain the desired results .Through in the Corel image database experiments show that: compared with the commonly used image retrieval algorithm, this algorithm has higher precision and recall, ANMRR lower value, the efficiency of the algorithm has been improved, can be more accurate to find users expect image.

Key words：image retrieval; semantic gap; region segmentation; firefly algorithm; attribute feature; EMD; support vector machine

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