工程与应用

融合监督学习与凝聚层次聚类的土地评价方法

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摘要　　由于专家能够对土地资源标定类别的数量是非常有限的, 提出利用少量已知类别的训练样本抽取其中的关联规则作为监督信息, 结合非监督方法中的变色龙算法, 以互连性和相似度作为评价标准进行分类的方法。该算法充分利用监督学习分类准确率高和非监督学习无需标定学习样本的优点, 只需利用少量带标签的学习样本, 即可得到较高的分类准确率。通过对广东省土地资源的评价实验, 表明仅随机选取300组训练样本即可得到较高的土地评价准确率94.418 4%, 比同样条件下聚类分析的准确率高4.904 1%。

关键词　　土地评价　监督学习　非监督学习　变色龙算法　聚类　Apriori算法

分类号

Land evaluation based on agglomerative hierarchical cluster algorithm combining with supervised learning algorithm

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Abstract

  By reason of the amount of land evaluation labeled by the experts is limited,a land evaluation method of combining supervised and unsupervised learning algorithm is proposed in this paper.Extracting land evaluation association rules by training a small amount of labeled samples as the supervised information,combining with the chameleon algorithm as the unsupervised method,the land evaluation method utilizes relative interconnectivity and comparability as the measurement to cluster the unlabeled samples,which takes full advantage of high accuracy of supervised learning classification and no necessity demarcated study samples.Experimental results of Guangdong province land resource demonstrate that,by only using 300 training samples chosen randomly,a 94.418 4% correct area rate of land evaluation can be obtained. It provides a higher precision with the accuracy improved by 4.904 1%,comparing with the results of the method cluster in the same condition.

Key words　land evaluation　supervised learning　unsupervised learning　chameleon algorithm　cluster apriori algorithm

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