

技术方法

遥感信息处理不确定性的可视化表达

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摘要:

如何全面、准确地度量和可视化表达遥感信息处理中不确定性的程度和空间分布方式, 是遥感信息不确定性研究的关键问题之一。传统的度量方法(例如误差矩阵)是将以训练样本集为基础的度量作为总分类精度的度量, 而我们需要估计模型对于“样本外数据”的性能。本文首先利用信息论和粗糙集理论等度量遥感分类影像属性信息的不确定性, 提出基于像元、目标和影像的遥感信息不确定性度量指标; 然后分别描述了基于不同度量指标的可视化表达方式, 并对我国黄河三角洲地区的Landsat TM影像进行了分类信息不确定性度量和可视化表达实验。

关键词: 遥感分类影像 不确定性 度量指标 可视化表达

VISUALIZING PRESENTATION OF THE ATTRIBUTE UNCERTAINTY IN CLASSIFIED REMOTELY SENSED IMAGERY

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Abstract:

The measurement and accurate visualization of the value and spatial distribution of uncertainty in remotely sensed image make up one of the key problems in the field of remote sensing. In the traditional fashions, e.g., in error matrix, the measurements based on the training data are regarded as the measures of the overall accuracy of classification models. Nevertheless, we need to estimate their performance on "out-of-sample-data" - data that have not been used in constructing the models. In this paper, the authors propose a strategy for calculating and visualizing attribute uncertainty of the classified remotely sensed imagery. With the information theory and the rough sets theory, three types of indices for measuring the attribute uncertainty of remotely sensed imagery based on pixel, object and image have been proposed. These measurements could measure effectively the attribute uncertainty and trace error as well as the propagation of uncertainty in classified remotely sensed data. In addition, corresponding visualizing fashions in different types of measurements are described.

Keywords: Remotely sensed imagery Uncertainty Visualization Measurement index

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