

技术方法

合理尺度纹理分析遥感影像分类方法研究

黄艳, 张超, 苏伟, 岳安志

中国农业大学信息与电气工程学院, 北京 100083

摘要:

纹理分析是提高遥感影像分类精度的重要手段之一。纹理特征与地物类别尺度密切相关, 应用纹理特征进行遥感影像分类,

关键在于纹理尺度的确定。对于灰度共生矩阵纹理分析来说, 就是选择大小合适的纹理窗口。根据样本半变异值在较小范围内有较

大变化的特性, 研究遥感影像相邻像素之间的空间关系, 将半变异值开始趋于恒值时所对应的步长作为纹理分析的窗口大小, 并在

纹理特征提取过程中针对每一个像素, 在最大似然分类结果的约束下, 适时改变其窗口大小, 提取纹理特征, 提出一种合理尺度纹

理分析的遥感影像分类方法。最后, 选择北京市昌平区2006年SPOT 5遥感影像, 利用TitanImage二次开发环境实现了该方法。实践

证明, 该方法能有效提高遥感影像的分类精度。

关键词: 半变异函数; 灰度共生矩阵; 纹理特征; 分类

A STUDY OF THE OPTIMAL SCALE TEXTURE ANALYSIS FOR REMOTE SENSING IMAGE CLASSIFICATION

HUANG Yan, ZHANG Chao, SU Wei, YUE An-zhi

College of Information and Electrical Engineering, China Agricultural University, Beijing 100083, China

Abstract:

Texture analysis has become an important means for improving the accuracy of remote sensing image

classification. As the texture feature is closely related to image scale, the determination of a scale for texture

analysis applied in remote sensing image classification is very important and corresponds to the choice of an

appropriate size of texture window for gray co-occurrence matrix texture analysis. The authors studied the spatial

relationship between the adjacent pixels in the remote sensing image, and selected the lag distance of the semi-

variogram that was determined when the value of the semi-variogram tended to be constant as the co-occurrence

window size. Under the restraint of the Maximum Likelihood supervised classification results, the co-occurrence

features were computed with a timely changeable co-occurrence window size according to the semi-variogram

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analysis. This paper introduced a method of reasonable scale texture analysis for remote sensing image

classification and had an image taken in Changping District, Beijing as an example. The texture feature was

extracted from SPOT5 remote sensing data in the Titan Image secondary development environment and involved in

classification. A comparison of the results using the method proposed in this paper shows that the classification

accuracy has been improved effectively.

Keywords: Semi-variogram Gray co-occurrence matrix Texture feature Classification

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通讯作者: 黄艳(1983-), 女, 在读研究生, 主要从事遥感应用研究。

作者简介:

作者Email:

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