

A Supervised Learning Data Mining Approach for Object Recognition and Classification in High Resolution Satellite Data

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Abstract : Advances in spatial and spectral resolution of satellite images have led to tremendous growth in large image databases. The data we acquire through satellites, radars and sensors consists of important geographical information that can be used for remote sensing applications such as region planning, disaster management. Spatial data classification and object recognition are important tasks for many applications. However, classifying objects and identifying them manually from images is a difficult task. Object recognition is often considered as a classification problem, this task can be performed using machine-learning techniques. Despite of many machine-learning algorithms, the classification is done using supervised classifiers such as Support Vector Machines (SVM) as the area of interest is known. We proposed a classification method, which considers neighboring pixels in a region for feature extraction and it evaluates classifications precisely according to neighboring classes for semantic interpretation of region of interest (ROI). A dataset has been created for training and testing purpose; we generated the attributes by considering pixel intensity values and mean values of reflectance. We demonstrated the benefits of using knowledge discovery and data-mining techniques, which can be on image data for accurate information extraction and classification from high spatial resolution remote sensing imagery.

Keywords : remote sensing, object recognition, classification, data mining, waterbody identification, feature extraction

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