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Opinion Article

Geographic Feature Extraction and its Techniques

Chelisha Seon*

Department of Geological Sciences, University of Alaska Anchorage, Alaska, USA

DESCRIPTION

The term "Digital Image Processing (DIP)" deals with manipulation of raw digital imagery data to extract and process meaningful information and methods. DIP is the use of a digital computer to process digital imageries through an algorithm. It allows a wide range of algorithms to be implemented on the input digital imagery and can avoid problems such as the build-up of noise and distortion during acquiring and processing of imagery. Since imageries are defined on two or more dimensions, DIP can be modeled as multidimensional systems. The development of DIP is mainly influenced by three factors:(1) the development of computers; (2) the development of mathematics theory; (3) there is an increased demand for a wide range of applications in the environment, agriculture, industry, medical science and military. DIP is divided into mainly two classes i.e. imagery pre-processing and imagery analysis or processing. Imagery pre-processing refers to imagery correction [1]. Image processing in its broadest sense contains the processes of imagery representation, transformation, enhancement, and classification. Through digital image processing, raw images can be magnified, calibrated, transformed into numerical information, edited, corrected and filtered. Some of the major fields in which DIP is widely used are image sharpening and restoration, remote sensing, medical science, transmission and encoding, machine/robot vision, pattern recognition, color processing, microscopic imaging, video processing and others [2].

The objective of this research work is to replace visual analysis of the imagery data with digital image analysis in identification of specially orchards and vegetation features. The present research work focuses on analysis of satellite imagery data on pixel scale to extract the geographic features using the geoinformatics techniques. In this context, satellite imagery data and image processing methods have been used in detecting, classifying, measuring and evaluating the impact of land use and land cover change on study area geographic features, their change patterns and spatial relationship [3].

Satellite spectral imageries are a good source for demonstrating what is happening in each place of the entire world. These spectral imageries can reassure analysts about the atmosphere's behavior because these imageries can concisely and accurately represent the development of events. Devoid of satellites, Land-Use/Land-Cover (LU/LC) monitoring and mapping, weather forecasting, vegetation monitoring, change detection in LU/LC applications and research would be very challenging. Satellite images are spectral images of the earth or other planets collected by satellites operated by governments and companies worldwide [4].

CONCLUSION

The satellite imagery datasets are essential for multi-temporal studies *viz*. LU/LC change, crop change and shifting cultivation monitoring, urban change, wetland change, landscape change, environment change, land surface temperature change assessment and glacier change assessment. Digital spatial data is supplied to the end-user in computer-readable format from the numerous satellite systems. It is often prepared using one of the three most common formats applied to organize the image dataset. In the multispectral imagery, namely files having multiple channels relating to the reflectance measurements in different wavelengths, pixel and band information can be organized in three different file format. Satellite imagery depicts the earth's surface with various spectra, time, radiance and increasingly detailed spatial resolution, depending on the orbital path of the sensing equipment of each acquisition system and its reconnaissance platform.

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Correspondence to: Chelisha Seon, Department of Geological Sciences, University of Alaska Anchorage, Alaska, USA, E-mail: chelisha.s@alaska.edu

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