Comparison of Pixel Based and Object Oriented Image Classification for Mapping Urban Greenery in Uwani Enugu.

Godwin Nnam, Raphael Ndukwu, Victor Nnam, Chibueze Onwuzuligbo and John Nnam (Nigeria)

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SUMMARY

Traditional classification methods are all pixel-based and do not utilize the spatial and context information of an image object and its surroundings, which has potential to further enhance digital image classification. In this study, this traditional method was compared with Object based image classification. This involved the development of a pixel-based classification model using the spectral characteristics of the image pixels, and the development of an object-based classification model using the spectral, spatial as well as the contextual information of the image pixels. The same set of ground data was used for accuracy assessment in both classifications for consistency. In the Pixel-based classification, a supervised Euclidean distance algorithm was utilized; in Object-oriented classification, the Bhattacharya algorithm was used. Using the Object-based classification, an accuracy of 93.71% was achieved while 57.34% accuracy was achieved for pixel-based classification. This showed that the object-based classification result was higher than that of the Pixel-based classification by 36.37%. classification method showed 86.24% area agreement with the vector map of Uwani Enugu. Based on the The greenery results (maps) from image classification was compared with the detailed map of Uwani urban in terms of spatial overlap and size in order to determine to what extent they agree. The Object-based classification method showed a 94.20% area agreement with the vector map, while the Pixel-based greenery distribution of Uwani obtained from the classified map, a greenery program is therefore recommended for the residents of Uwani Enugu to improve the environmental condition and aesthetics in the area.

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1