Classifying Vertical Structure of Harae-ri Forest in Jeju Island , Korea from Optic and RADAR Satellite Images Using Artificial Neural Network

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Abstract: All forests form a vertical structure, and the vertical structure has an important effect on the vitality of forests. The survey of the vertical structure of forests has been mainly conducted by aerial image and human field surveys, but the limitations of visual reading by photography and limited human access to them require a lot of time and money. Recently, a method using remote sensing data has been used for the exploration of large forest areas. However, there is a limitation in the analysis of complex forest structure using only remote sensing data. Therefore, it is necessary to combine a machine learning technique capable of mass data mining. We used optical satellite image, synthetic aperture radar (SAR) image, World digital elevation model (DEM), digital terrain model (DTM) and vegetation vertical structure information in Jeju area. In this study, remote sensing data and machine learning artificial neural network were used to analyze the vertical structure of the forest. As a result, the overall accuracy was about 66.64%. The results of this study are expected to be used as data for the analysis of the vertical structure of forests in the future.

Keywords: Forest Vertical Structure, Machine learning, ANN (Artificial Neural Network)