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# An Efficient Loom of Vegetation Exploration in Remote Sensing Images Using Object Based Threshold Classification

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***Abstract* - In recent years, despite the increased availability of high resolution satellite images there is a growth of extensive research in field of remote sensing image analysis. As such, there is a need for simple and efficient image classification technique to classify the remote data. The input data is obtained from the Landsat-7 satellite, which formulates to accomplish remote sensing image classification. This research work has been done with Object Based Threshold Classification to find the vegetation exploration with Normalized Vegetation Index, Near Infra-Red and visible brightness. The resultant land cover image with Object Based Threshold Classification has more data classes and higher resolution than the normal image classification techniques. This research paper discusses an efficient and effective use of image classification which helps to classify the vegetation exploration in remote sensing images.**

**Keywords - classification, Landsat-7, NDVI, NIR, remote sensing,**

## I. INTRODUCTION

Remote sensing plays an imperative role in the field of research. Additionally, remote sensing paves a dexterous part for observing the information about the properties of an object without approaching into a physical substance [1]. It also captures the radiation in various wave length reflected from the image which extracts the information from the images where it tags on number of criteria to classify the remote sensing images. NDVI is one of the effective criteria to classify the vegetation exploration in remote sensing images. Segmentation implies the gathering of neighboring pixels into areas in perspective of comparability criteria. Image object in remotely detected symbolism are consistently homogenous and can be delineated by Segmentation [2]. The quality of classification is specifically influenced by segmentation.

## I. OBJECT ORIENTED CLASSIFICATION

Analysis of an image in the object oriented approach included classifying the image objects as indicated by class portrayals composed in a proper information base.(9)The process of the object oriented classification basically included two divisions, they are segmentation and classification.

### *A. Multi Resolution Segmentation*

Multi Resolution segmentation is an effective technique for dealing with very high resolution imagery, some of the image objects that it generates do not match the geometries of the target objects, which reduces the classification accuracy (9) the conception of Multi Resolution segmentation, in which where mostly three distinct levels of image substances have been made representing to various scales. The majority of the image objects were consequently connected to a system after the division procedure. Each image object knows its neighbors, in this manner managing imperative context data for later analysis (12).Subsequently reiteration of segmentation with various scale parameter makes a progressive system of image objects. Each image object knows its super-object and its sub-objects.

### *B. Classification*

The power of information base for the analysis and classification of image objects is the suspected class hierarchical. (8) It contains all classes of an order plot. The classes can be assembled in a various leveled way permitting the going down of class portrayals to adolescent classes from one viewpoint, and important semantic gathering of classes on the other.

This basic various leveled gathering offers a dreadful extent for the formulation of image semantics and for numerous analysis techniques (9).the user cooperates with the technique and in view of statistics, surface, frame and shared relations among objects characterizes preparing ranges. In this research work we implicit the effective algorithms with the levels of image object.

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Algorithm : remove classification
Image domain : image object level
Parameter filter : unclassified

***C. Normalized Difference Vegetation Indexes (NDVI)***

In general, NDVI shows the results where the brighter the pixel is, the greater the amount of vegetation and false vegetation present. The NDVI provides a measure of the amount and strength of vegetation at the land surface. It is a non-linear function that varies between –1 to +1 .The magnitude of NDVI is related to the level of photosynthetic activity in the observed vegetation. Values of NDVI for vegetated land generally range from about 0.1 to 0.7 with values greater than 0.5 indicating compact vegetation. In general higher values of NDVI point toward greater robustness and amounts of vegetation. The reason NDVI is related to vegetation is that vegetation and false vegetation reflects very well in the near infrared part of the range.

NDVI = (mean NIR-mean +Red) / (mean NIR+ mean+ Red)

Visible Brightness= (mean Blue + mean Green) -(mean Red) /3

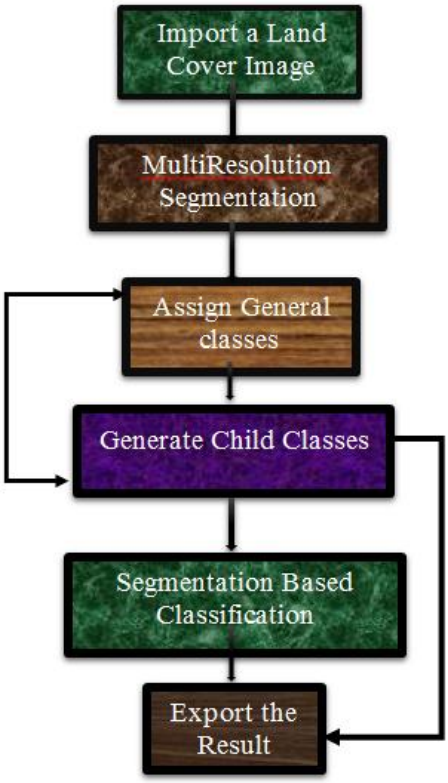
## III.PROPOSED WORK

The objective of the proposed research work is to classify the vegetation in remote sensing images with channels like red, green, blue and near infra-red values [4]. In the interim the classification of vegetation has been done in two ways Vegetation and False-vegetation. The resultant image will display with characterization of vegetation. This research is performed using ecognition developer, which is best suitable for classifying the vegetation with more accuracy. Object based classification will integrating comparable pixel begin with, then segment will be allocate to the land cover. It have a many algorithms for classification as beneath

i) Execute child process
ii) Remote classification
iii) Assign class

This paper explores the classification of the vegetation index with different criteria like veg and false veg. While tap on an image the specific area will be selected and it's segmented the image by using multi resolution algorithms. After that Classification of image with remote classification algorithms. [3] When we progress a classification, we have to assign a classes for classification. [4] The resultant image will be display with NDVI and Visible brightness.

## IV.METHODOLOGY




## V.EXPRIMENTAL RESULTS

***A. Threshold Classification***

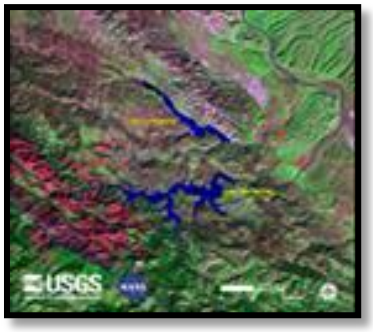



***Fig 1: Threshold Classification***

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*B. Visible Brightness Condition*

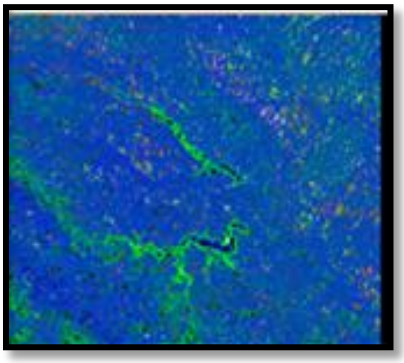

*Fig 2: Visible Brightness*

*C. Remove Classification*

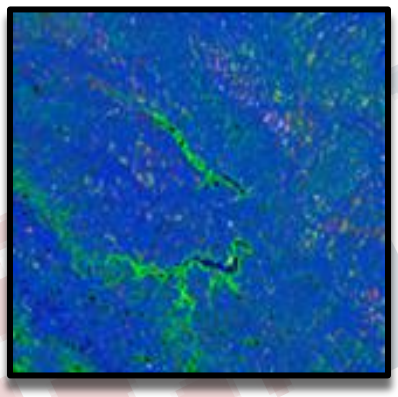

*Fig 3: Remove classification*

*D. Classification with NDVI*

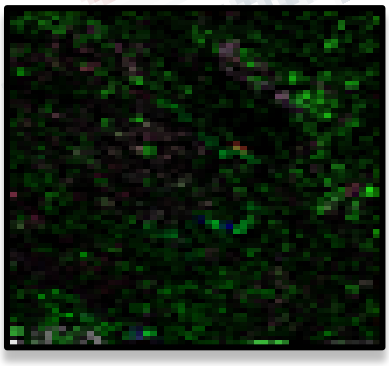

*Fig 4: Classification with NDVI*

*E. Vegetation Classification*

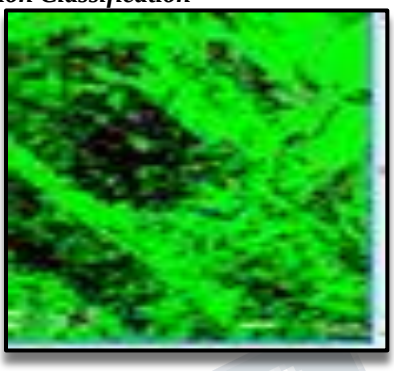

*Fig 5: Classification of Vegetation*

*Table: 1 (Below the table described when click on an image, based upon a pixel variation and formula calculation the NDVI and VB values are changed.)*

| NDVI | VISIBLE BRIGHTNESS |
|---|---|
| 314.32 | 24.86 |
| 0.1983 | 36.78 |
| 118.16 | 26.19 |
| 187.65 | 0.89 |

*Table: 2 (Below the table described when click on an image, based upon a pixel variation and formula calculation the layer values are changed.)*

| LAYER | VALUE 1 | VALUE 2 |
|---|---|---|
| Red | 61.32 | 8.0000 |
| Green | 86.95 | 11.91 |
| Blue | 63.96 | 129.43 |
| NIR | 78.69 | 84.63 |
| Max.diff | 0.3444 | 2.126 |

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## VI.GRAPHICAL ILLUSTRATION OF SCHEME

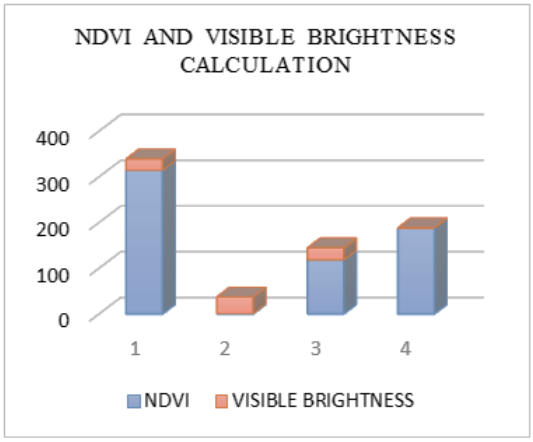


*Fig 6 Calculation of NDVI and Visible Brightness*

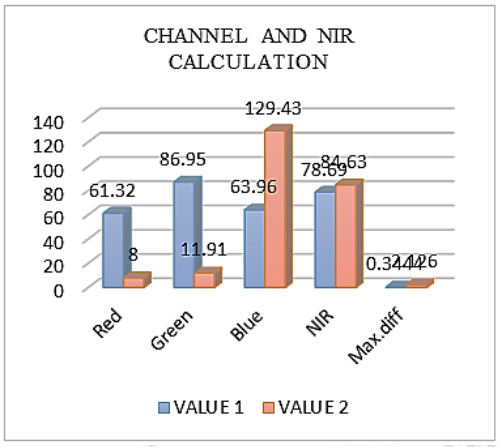


*Fig 7 Calculation of Channels and NIR values*

## VII. CONCLUSION

The multi resolution segmentation produces highly homogeneous image objects in arbitrary resolution on different types of data .All three aspects are of considerable advantage and allow to apply this segmentation technique with good results to many different types of image data and problems. In contrast, the multi resolution segmentation presented here is object oriented: each decision for a merge is based on the concrete recent attributes of the image objects merged in previous steps. This research work helpful to upcoming researches.

## REFERENCES

[1] Chen, P., Lu, X., Liew, S. & Kwoh, L. 2002, "Quantification of land cover change and its impact onhydro-geomorphic processes in the upper yangtze using multi-temporal Landsat imagery: An example of the Mining area", Geoscience and Remote Sensing Symposium, 2002. IGARSS'02. 2002 IEEE International IEEE, pp. 1216.

[2] Černá, L. & Chytrý, M. 2005, "Supervised classification of plant communities with artificial neural networks", Journal of Vegetation Science, vol. 16, no. 4, pp. 407-414.

[5] R.M. Haralick and K. Shanmugam 1973] Textural Features for Image Classification, in IEEE Transaction on Systems, Man and Cybernetics, SMC-3, 610 - 621, 1973.

[6] DEC (2009b). Draft: A Review of NRM Regional Resource Condition Targets Draft Report as part of the Resource Condition Monitoring - Native Vegetation Integrity Project

[3] Ursula C. Benz, Peter Hofmann, Gregor Willhauck, Iris Lingenfelder, Markus Heynen., 2003. Multi-resolution, object-oriented fuzzy analysis of remote sensing data for GIS-ready information, ISPRS Journal of Photogrammetry & Remote Sensing 58, 239– 258

[4] Hay, G.J. and G. Castilla, Object-based image analysis: Strengths, weaknesses, opportunities and threats, in: 1st International Conference on Object-basImage Analysis Salzburg, 2006.

[7] L´aszl´o, I., T. Pr¨ohle, I. Fekete and G. Csornai, A method for classifying satellite images using segments, Annales Univ. Sci. Budapest., Sect.Comp.23 (2004), 163–178.

[8] Sasaki, T.; Imanishi, J.; Ioki, K.; Morimoto, Y.; Kitada, K. Object-based classification of landcover and tree [9] species by integrating airborne LiDAR and high spatial resolution imagery data. Landscape Ecol. Eng. 2011, 8, 157–171.

[9] Goward, S. N., Markham, B., Dye, D. G., Dulaney, W., & Yang, J. L.

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Ms. S. Dhanya Shree doing her research in Bharathiar University, Coimbatore. She has published papers in international journals. She has actively participated in several seminars and workshops. Her areas of interest are Image processing, remote sensing and Data Mining