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Certain Investigation on Hyper Spectral Remote Sensing Image

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ABSTRACT

In this paper, a technique has been designated for classification of satellite remote sensing of hyperspectral image. The classification process is based on the three main categories: (1) Clustering, which performed in supervised techniques using Thresholding effect of image pixel intensity and (2) segmented and texture based image analysis, in this process to achieve a new textural based image clustering to overcome the problem of multi-label images in satellite remote processing. Finally, it is clustered and result in segmented output.

Keywords : Hyper Spectral Remote Sensing Image, Image Classification

I. INTRODUCTION

Digital image processing supports strong research in the areas of image classification and image based pattern recognition. Recently, these areas are broadly applied in remote sensing, medical image processing, and robotics. Between these areas Image classification is used everywhere to shorten and to change the representation of image in to something that is more significant and easier to analyse. In traditional classification, a general pixel clustering process is presented based on thresholding effect of image pixel intensity. Presented a shapelet-based spatial–spectral classification of hyperspectral image data. The shapelet-based approach varies from earlier suggested sparse representation- based classifiers for hyperspectral image data. In this method that sophisticated prior knowledge about the spatial nature of an image is exploited by applying a constructed highly adapted patch-specific based classification procedures by means of the representation error. The shapelet-based spatial–spectral classification approach shows greater outcomes in comparison to sparse-representation-based classifiers that use only limited spatial information [1]. Developed a method for object-based mid-level representation for semantic classification for high resolution remote sensing images. The mid-level representation method is how to boost the relatively low classification accuracy caused by using pixel-based image classification approaches and low-level visual structure. The method of low-level visual features and high-level semantics are not well define in semantics images. The object-oriented semantic classification algorithm that combines bag-of-visual-words (BOV) with the optimal segmentation scale intends to overcome the defect of conventional BOV in lacking of relationship between image patches and to give more thorough description [2]. Discuss the generic [5] method for the modelling and detection of compound structures that involve arrangements of an unknown number of primitives in large scenes of remote sensing. The modelling process are investigates via Markov random field and the detection task has formulated as the selection of multiple subsets of candidate regions from a hierarchy segmentation. Where each set of selected regions has been constituted an instance of the compound

structure. The combinatorial selection problem of hierarchy segmentation is solved by the joint sampling of groups of regions by maximizing the likelihood of their individual appearances and relative spatial arrangements of remote sensing images. Ddeveloped a new technique of highly efficient Multiscale and Multi feature Normalized (MMN) [4] cut algorithm for HSR imagery segmentation. The MMN cut is much less sensitive to image boundaries and also preserves the multi scale information. Normalized Cuts (NC), as a commonly used for the method of natural image segmentation of remote sensing images. It can also acquire a globally optimized segmentation result equivalent to the optimized partitions of a super pixel graph. These graph which can provide powerful indication to guide the HSR imagery segmentation. Suggested a appropriate method for terrestrial laser scanning in planner segmentation of satellite segmentation. Its normal vector and the distance from the origin parameterize the planner segmentation. It is multiple standpoints can be used for such applications as plane-based registration and 3-D reconstruction of buildings has been presented [3].

II. WORK AREA

The Salinas hyperspectral datasets is selected for classification Experiments. The Salinas datasets captured by the Airborne Visible/Infrared Imaging Spectrometer (AVIRIS) sensor with 224 spectral band and the dataset has a pixel value of 512 × 217 and spatial resolution of 3.7m of Fig.1 shows the RGB colour composition and ground truth reference map and colour code of Salinas's dataset. In our process, the images are Train Data for 77% of different Dataset and its corresponding Test Data for 23% of the different Dataset.

III. RELATED WORKS

A. Filtering Technique

The Cellular Automata is simple method and synchronous transition technique. The remote sensed digital image like Salinas is considered as 3×3 bidirectional array.

B. Enhancement Technique

The filtered image is enhanced using the histogram equalization. This histogram equalization involves in the assignment of the minimum value of the pixel intensity of input image.

IV. RESULTS AND DISCUSSION

The MATLAB programming is used to input the hyper spectral image as in Fig. 3(a) and is filtered and enhanced as shown in Fig. 3(b) and (c) respectively and evaluates the each stage of the proposed SSTBA algorithm for the Salinas dataset.

A. Comparison Matrices Analysis

Confusion matrix and Kappa coefficient is a techniques for calculation of Accuracy assessment with SSTBA based HSI classification. It is based on the data providing the assumption on the classes of reference datasets. The datasets are classified two manner 1) reference data value and 2) ground truth data value. Moreover the FAR value 3.6145, GAR value 96.3855 has been presented in Table 1.

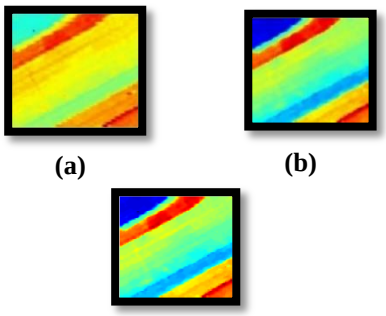

Figure 3. Output images of SSTBA clustering. (a) Input image (b) Filtered image (c) Enhanced image

Table 1 FAR and GAR Analysis

S.No	FAR	GAR
1	3.6145	96.3855
2	0	100

V. CONCLUSIONS

Paper contribute, a novel dictionary learning method called SSTBA for HSI classification has been proposed. The SSTBA representation show the outstanding ability to give better description of the HSI classification, especially exploiting SSSTBA in NN as classifier. The experiments conducted for Salinas's datasets prove the better performance of the proposed method compared with multi-labeling image extraction methods at different HSI classification procedure.

VI. REFERENCES

[1] Erlei Zhang, Licheng Jiao, Xiangrong Zhang, Hongying Liu, and Shuang Wang, "Class-Level Joint Sparse Representation for Multifeature-Based Hyperspectral Image Classification" IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 2016, 9(9),pp.4160-4177.

[2] Ribana Rosche, and Björn Waske, "Shapelet-Based Sparse Representation for Landcover Classification of Hyperspectral Images" IEEE Transactions on Geoscience and Remote Sensing, 2016, 54(3),pp.1623-1634.

[3] Guiyun Zhou, Shuai Cao, and Junjie Zhou, "Planar Segmentation Using Range Images From Terrestrial Laser Scanning", IEEE Geoscience And Remote Sensing Letters, 2016,13(2),pp.257-261.

[4] Yanfei Zhong, Rongrong Gao, and Liangpei Zhang,"Multiscale and Multifeature Normalized Cut Segmentation for High Spatial Resolution Remote Sensing Imagery" IEEE Transactions On Geoscience And Remote Sensing, 2016,54(10),pp.6061-6075.

[5] H. Gökhan Akçay and Selim Aksoy, "Automatic Detection of Compound Structures by Joint Selection of Region Groups from a Hierarchical Segmentation" IEEE Transactions on Geoscience and Remote Sensing, 2016, 54 (6), pp. 3485-3501.