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Adaptive modeling on satellite image processing and info extraction using knowledge fusion mining

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ABSTRACT:

Satellite Imagery is the most advent of landscape analysis. These satellite images were made from the physical point of element in a raster image called pixels.In existing system, a system has been designed to analyze the changes acquired in a particular landscape by utilizing satellite imagery of the landscape. This system formulates a Comparative analysis with historical and the recent imagery of the landscape with respect to the changes in the soil, water, weather, landscape. The proposed system designs a system that formulates a comparative analysis with historical and the recent imagery by incorporating the concept of simage replacement. The resultant of the existing methodology does not predict or suggest anything for the future about the landscape whereas the proposed methodology does it with by means of image replacement. The satellite imagery under subject is tuned up with its part with a minute changes in the picture with a vision to the future and the comparative analysis has been made. Performance analysis has been done to the comparative analysis system with respect to the time and visualized graphically.

INTRODUCTION:

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This system formulates a comparative analysis with historical and also the recent mental imagery of the landscape with relevance the changes within the soil, water, weather, landscape. The planned system styles a system that formulates a comparative analysis with historical and also the recent mental imagery by incorporating the conception of image replacement.

EXISTING SYSTEM

Medium resolution sensors were used in the existing approach which have an ideal spatial resolution for vegetation mapping at the field scale in order to predict the satellite detected images. The captured images in the urban areas were so very cloudy and with so many disturbances to capture, so in our system we fails to identify the clarity of images.. (Apart from that the urban areas tends to opt for more spatial resolution Landsat scenes are about35% cloud covered on average globally and probability of taking two cloud-free observations of a Landsat images at southern Asia within 48 days is less than 60%. Landsat is limited by a 16-day revisit cycle and this was made worse by cloud contamination in those images. In the existing system the Landsat images was generally used to monitor crop condition , yield estimates, forest fire detection, land cover change mapping analysis alone.

ALGORITHM DESCRIPTION

PATTERN RECOGNITION ALGORITHM :

The collection and analysis of reflected, emitted, or back-scattered energy from an object or an area of interest in multiple bands of regions of the electromagnetic spectrum.The classical pattern recognition techniques are rooted in statistics and decision theory, the machine learning paradigm is commonly used to design practical systems.The image analyst may select training sites in the image that are

representative of the land-cover or land-use of interest. If the environment where the data was collected is relatively homogeneous

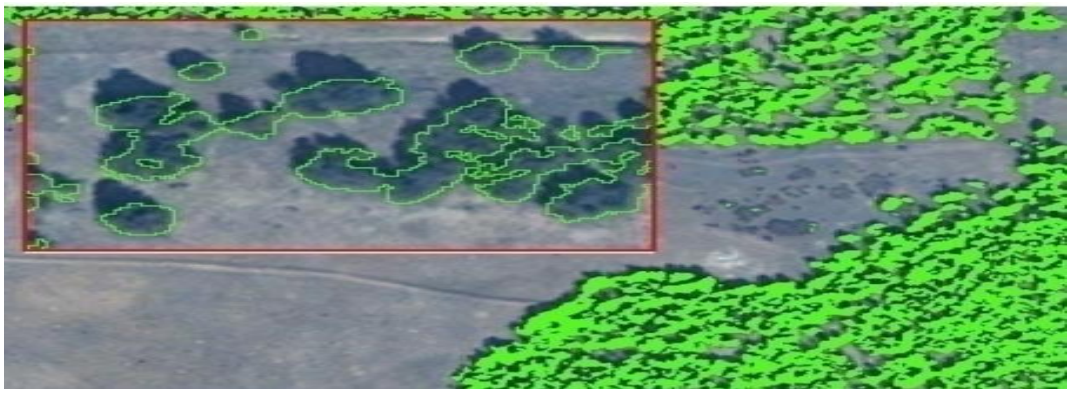
- **Mutually exclusive**: there is not any taxonomic overlap of any classes (i.e., rain forest and evergreen forest are distinct classes).
- **Exhaustive**: all land-covers in the area have been included.
- **Hierarchical**: sub-level classes are created, allowing that these classes can be included in a higher category (e.g., residential).

It was originally designed for use by the U.S Department of Defense and NASA.It is a much faster and cost effective way to map features on the ground.Land Cover Classification Mapping is derived using an automated technique called Accelerated Feature Extraction (AFE)

Digital Image Classification & Analysisto Detect Features Based on

- Pattern Recognition
- Spectral Content
- Spatial Contex

FOREST BIOMASS



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URBAN FORESTRY

Drawbacks:

1. STARFM require radiomerically, geometrical consistent of both Landsat and MODI which is difficult.
2. STARFM also require better pair of MODI landscape images.
3. MODI at nadir view does not match with Landsat therefore more precise co registration between Landsat and MODIS is required.

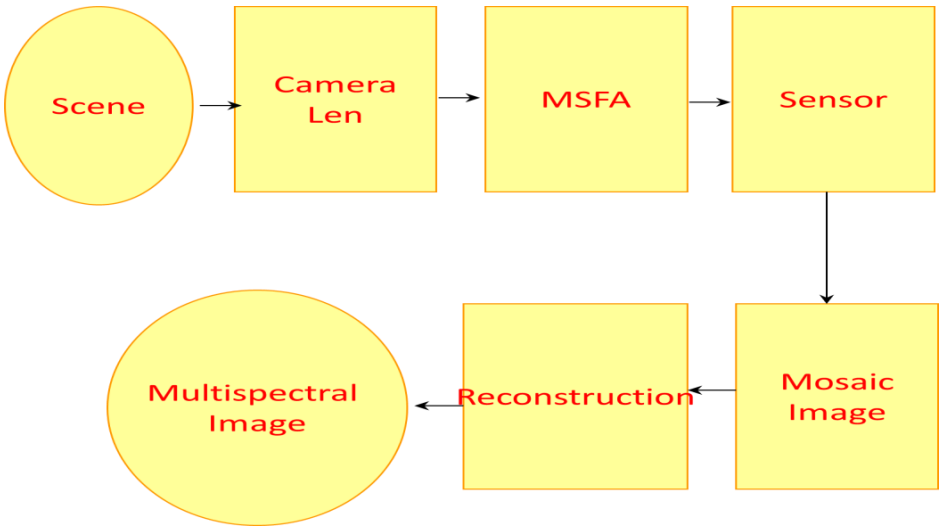
PROPOSED SYSTEM:

A possible solution for applications that require fine spatial resolution (The spatial and temporal adaptive reflectance fusion model) STARFM was introduced. STARFM model blends Landsat and MODIS data to generate synthetic "daily" surface reflectance products at Landsat spatial resolution. It requires a minimum of two image pairs as the inputs into the algorithm. The STARFM approach can work with one image pair, which is a more flexible approach for cloudy regions where finding cloud-free Landsat scenes are very scarce. The one image pair detection is useful in forward prediction of Landsat imagery because new MODIS data are available throughout the growing season. In this system, we using two types of algorithm one is multispectral algorithm. it is used for scanning and collect the

data. Multispectral is a type of sensor with sensitive to a few specific wavelength and hyperspectral sensitive to many (can reach 200 bands) specific bands. Another one is The Apriori Algorithm is an influential algorithm for mining frequent itemsets for Boolean association rules.

MULTISPECTRAL TOPOGRAPICAL ALGORITHM:

A scanning system used to collect data over a variety of different wavelength ranges is called a multispectral scanner (MSS), and is the most commonly used scanning system. There are two main modes or methods of scanning employed to acquire multispectral image data - across-track scanning, and along-track scanning. Multispectral is a type of sensor with sensitive to a few specific wavelength and hyperspectral sensitive to many (can reach 200 bands) specific bands.Across-track scanners scan the Earth in a series of lines. The lines are oriented perpendicular to the direction of motion of the sensor platform.



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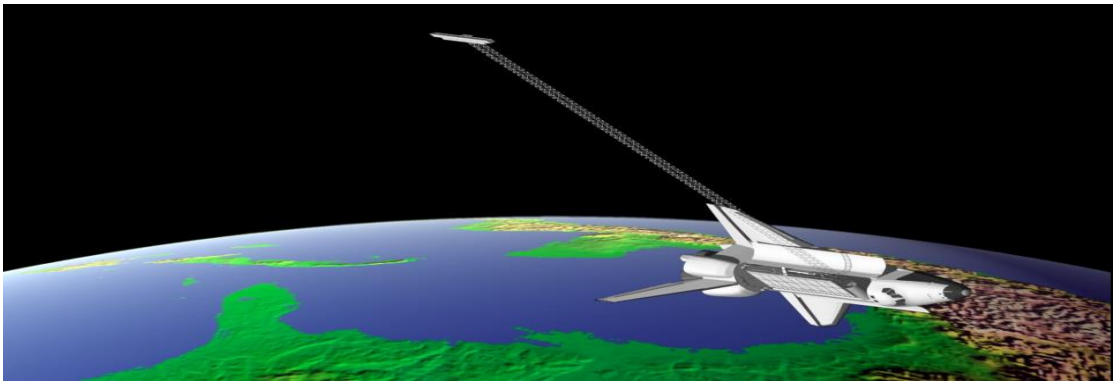

APRIORI ALGORITHM:

The Apriori Algorithm is an influential algorithm for mining frequent itemsets for boolean association rules.Frequent Itemsets: The sets of item which has minimum support (denoted by L_i for i^{th}-Itemset).Apriori Property: Any subset of frequent itemset must be frequent.Join Operation: To find L_k , a set of candidate k-itemsets is generated by joining L_{k-1} with itself.

ADVANTAGES

1. This STARFM method focuses on cloud free images from data of Landsat and MODI.
2. STARFM method improves finer spatial resolution of images. It provides better handle heterogeneous pixels even if no “pure” neighbor pixel exists.
3. STARFM only requires a pair of images from Landsat and MODI.

PROPOSED SYSTEM

4.1 INTRODUCTION:

A possible solution for applications that require fine spatial resolution (The spatial and temporal adaptive reflectance fusion model) STARFM was introdu

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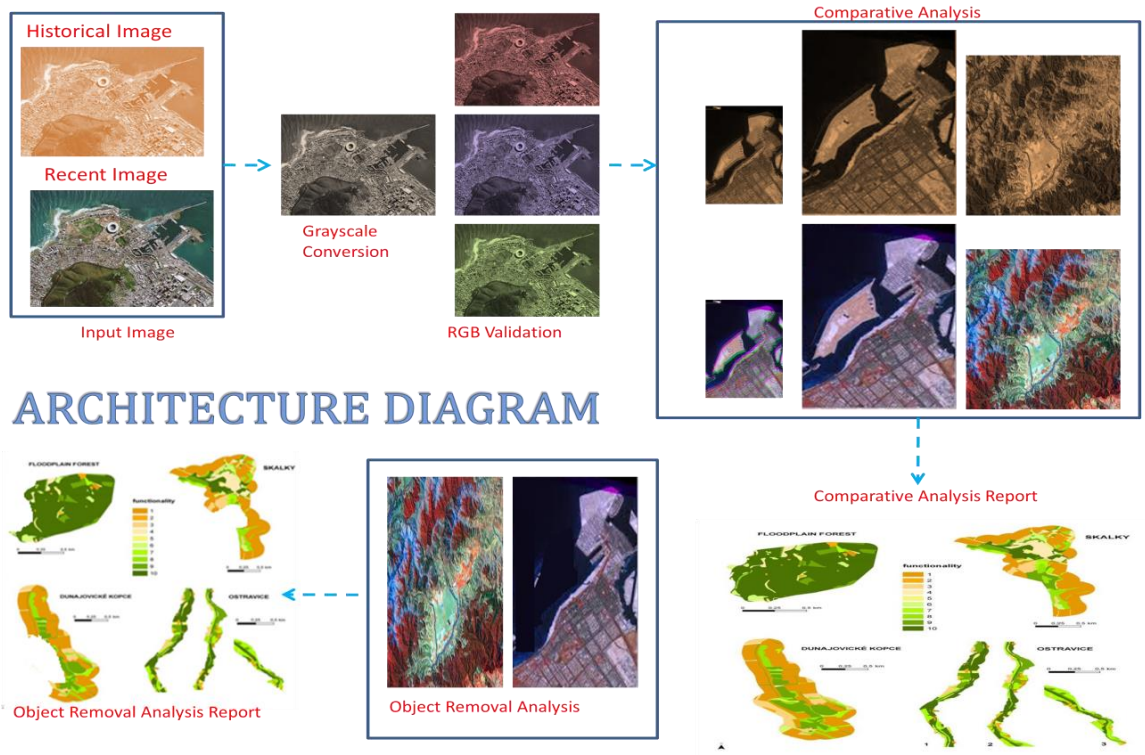
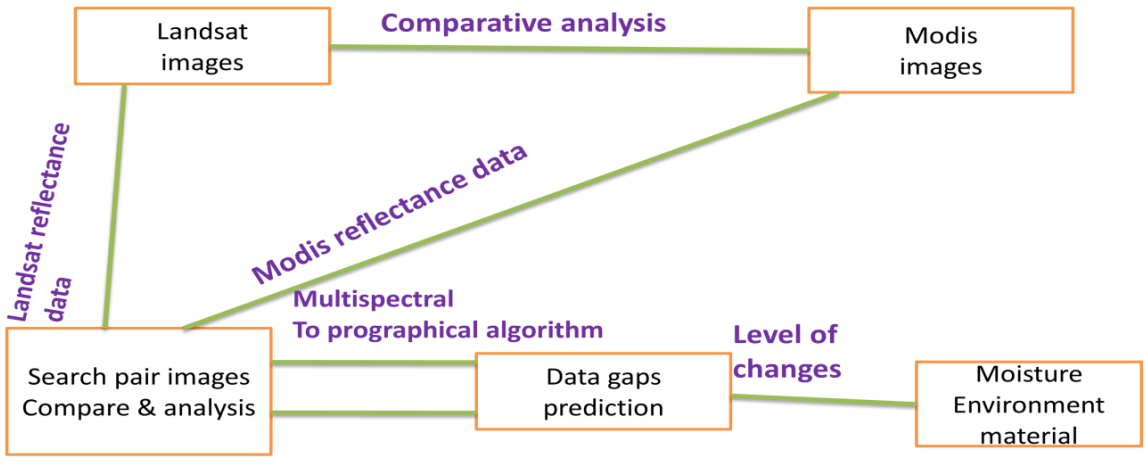
ARCHITECTURAL DIAGRAM:



BLOCK DIAGRAM



IMPLEMENTATION

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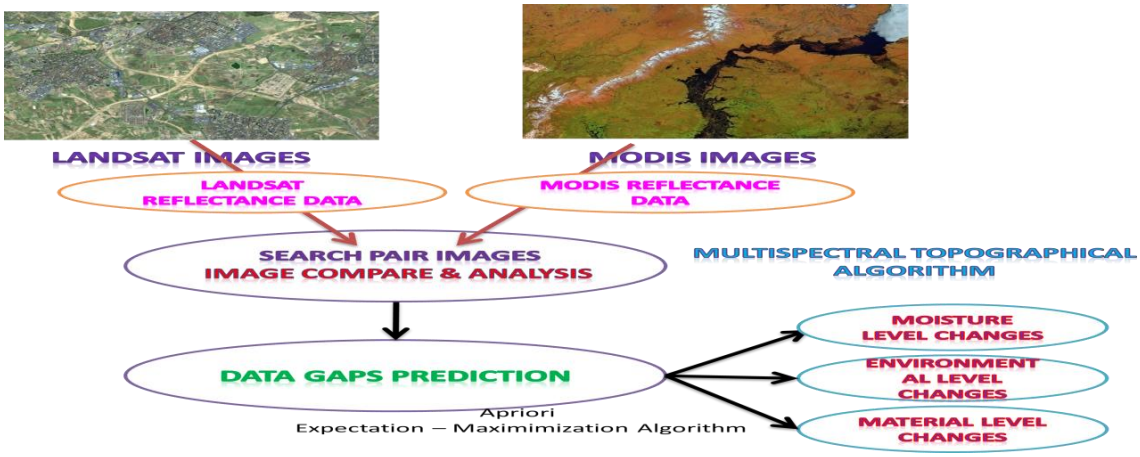

LANDSAT IMAGES SCAN MODULE

Landsat have an ideal resolution which is much suitable for land use and land cover change mapping, crop condition monitoring and yield estimation, forest fire detection and global ecosystem carbon-cycle studies. Landsat is limited by a 16-day revisit cycle and it is very difficult to acquire cloud-free remotely sensed data with ideal resolution.

MODIS IMAGES SCAN MODULE

User's criminal history is verified by admin using multi-threading scenario towards each resource. Criminal history Data's are loaded into the databaseEach process has a resource needed by another process, like simultaneously resource will be modified and verified by admin.So, it makes deadlock occurs in criminal history database and it is prevented by using synchronization parallel computing technique. Each resource wait for another resource completion.

IMAGE ANALYSIS AND COMPARE MODULE

Image taken by LANSAT and MODIS are blend together and analysed by STARFM to get a dense temporal information about the region.STARFM requires

a pair of MODIS and Landsat images and these images should be radiometrically , geometrically consistent.

DATA GAPS PREDICTION MODULE

Due to cloud contamination in the images some pixels in the MODIS BRDF/albedo algorithm show filled values and have data gaps in them.For these gaps, we used substituted Bidirectional Reflectance Distribution Function (BRDF) parameters, which were obtained from a BRDF lookup table based on the MODIS International Geosphere–Biosphere Programme (IGBP).

MOISTURE CHANGES MODULE

Agricultural remote sensing modeling is also an important factor in landscape prediction that determines the effects of climate (moisture) change on agriculture.In this paper, we focus on the wheat growth season, from October to the following May.The data fusion tests in these sites focus on monitoring crop growth and vegetation based on seasonal variability.

ENVIRONMENT CHANGES MODULE

Three tests that use MODIS and Landsat data pairs from the same season of the same year, the same season of two different years, and different seasons from adjacent years.The accuracy of the predicted results depends on the data consistency between the MODIS nadir bidirectional-reflectance distribution function and Landsat surface reflectance on both the paired dates and the prediction dates.Based on the above made prediction the environmental changes can be found certainly.

MATERIAL CHANGES MODULE

The STARFM approach was modified into spatial and temporal adaptive algorithm for mapping reflectance change (STAARCH).This algorithm helps to detect

reflectance changes associated with land cover change and disturbance. Land cover change will simultaneously leads to material change in that region.

PERFORMANCE EVALUATION

In this module we will evaluate the performance of the Satellite Imagery based comparative analyzer for landscape prediction `the data system. Two models that estimate monthly evapo transpiration are comparatively evaluated in order illustrate how the recommended methods can be applied. The performance evaluation module will eradicate the overall performance of the Data gaps prediction and level of changes in the earth.

CONCLUSION AND FUTURE ENHANCEMENT

This system predicts a Comparative analysis with historical and the recent imagery of the landscape with respect to the changes in the soil, water, weather, landscape by incorporating the concept of image replacement.

FUTURE ENHANCEMENT

The satellite imagery under subject is tuned up with its part with a minute changes in the picture with a vision to the future and the comparative analysis has been made.

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