Project 17

Given Google Maps satellite views of a city, identify the amount of greenery, urban cover

Github link: https://github.com/anirudh456/DIP_project_Greenery_Cover

Team members:

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Overview

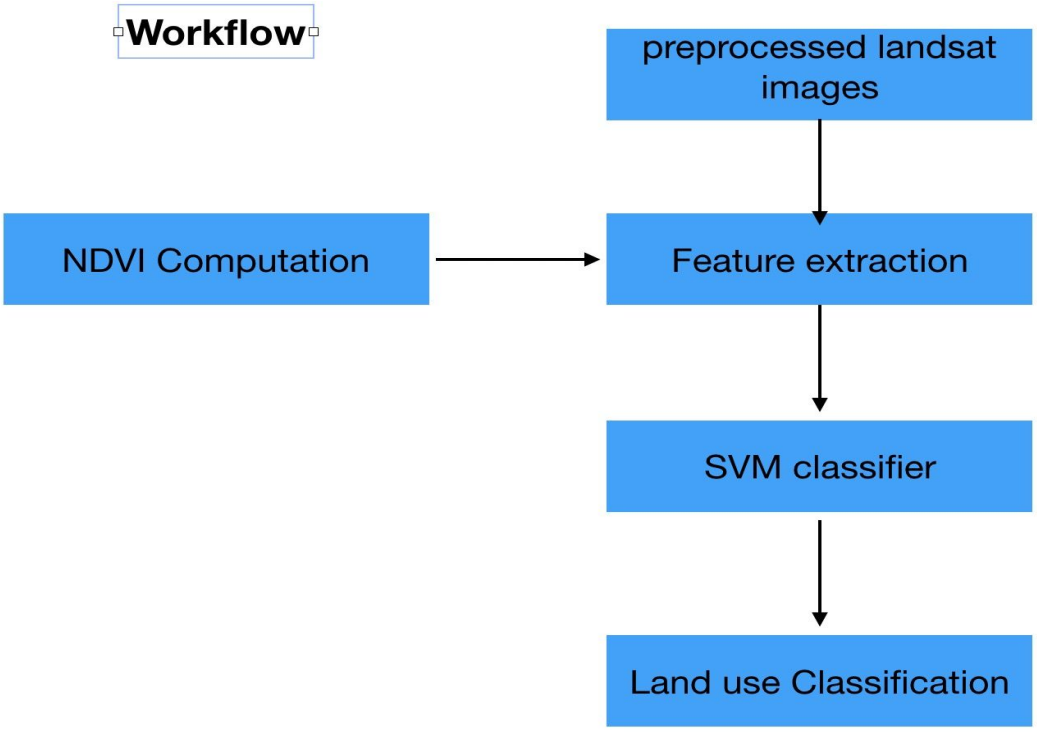
Problem Statement:

Given Google Satellite view of a city, identify the amount of greenery and urban cover.

Approach:

We decided to build a Classifier that can cluster the satellite image into greenery, urban etc

For this project, we are primarily going to work on Landsat - 8 satellite images to train our classifiers.
This can be done by using the various spectral bands like Red, Green, Blue etc, available in the Landsat images.
The classification can be done by using features like red, green, blue available from the spectral band and For a better and more accurate classification, NDVI values can also be used as one of the features.



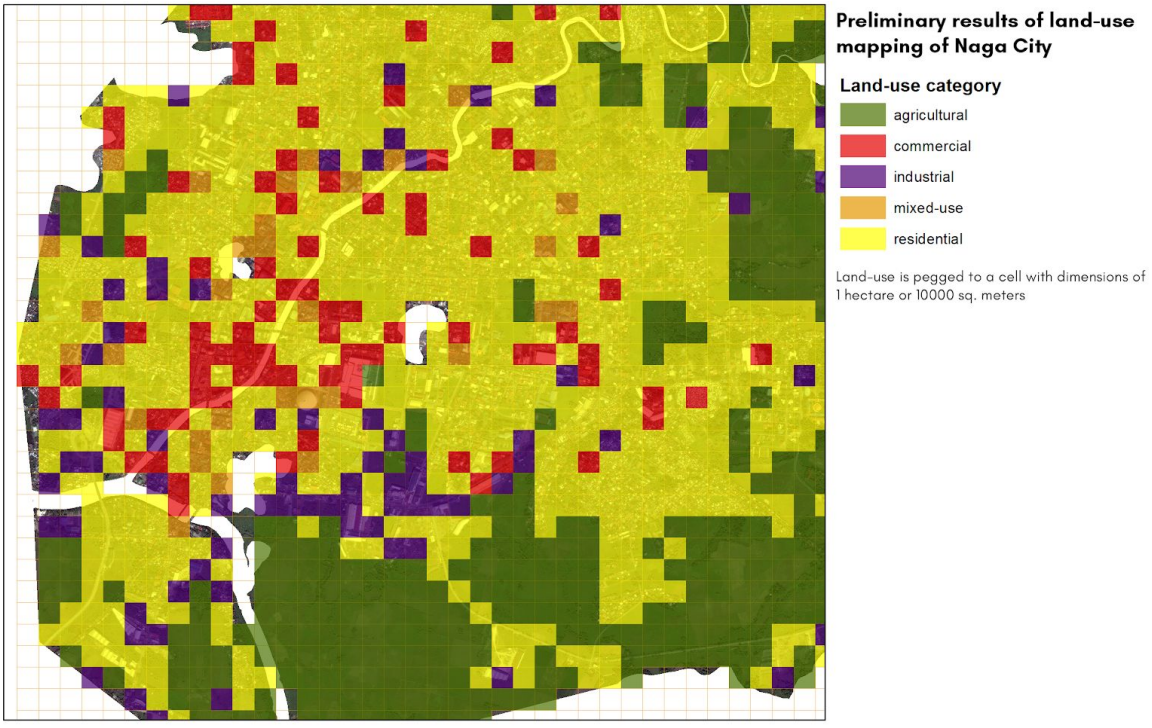
Goals

1. Collect the landsat 8 dataset of satellite images to work with.
2. Exploring extra features(like NDVI) that can be used for classification if possible.
3. Compute the NDVI value of the satellite image which can be used later as one of the features to classify the satellite image into greenery, urban area or water.
4. Build an SVM classifier with Red, Green, Blue and NDVI etc, as features to be used a features.
5. Improve the classifier (add more/new features) to improve the accuracy.
6. How to overcome obstacles or challenges like cloud cover, buildings having green roof.

Results

1. Find the percentage of green cover and urban area given a satellite image of an area

Similar to the below image..



2. Run this algorithm on different datasets and find the accuracy.

Team members and division of work

Our project didn't have any resources or paper given as a reference material .We researched a lot of material and approaches online and We decided to build a Classifier that can cluster the satellite image into greenery, urban and water. This can be done by using the Red, Green, Blue and NDVI as features.

Milestones

I. Collection of landsat dataset

Complete By: Before the first Presentation of the project (First Evaluation)

II. Understanding and implementing the NDVI on the satellite images for Classifying different covers (greenery/urban) based on the indexing

Understand the concept thoroughly and start implementing it to reach the first goal and show the results.

Complete By: Before the first Presentation of the project (First Evaluation)

III. Implement/ Build the svm Classifier using the above computed NDVI values as a part of the features .

Complete By: Before the final Presentation of the project (Final Evaluation)

References:

1.h ttp://adsabs.harvard.edu/abs/2013AGUFMIN24B..02B
2.h ttps://gisgeography.com/ndvi-normalized-difference-vegetation-index/
3.h ttps://www.gislounge.com/measuring-vegetation-satellite-imagery-ndvi/