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IMAGE LOCALIZATION USING GOOGLE MAPS

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ABSTRACT

Now days, government of India is making awareness about green energy. So, various analyses have to make for promotion of green energy like solar energy over the country. It is required to know about the rooftop area useful for holding solar panels. Image localization and image registration techniques are the mostly used by the researchers for searching image in specified place. Google earth image searching is required for localization and analysis of specific area over the areal image. This type of searching is useful for calculating the area of solar rooftop in any specific location. Within the range of city, it is required to get snap shots of areal images within which rooftop is required to search. This paper is proposed for the search of template area over the areal map area. We have designed the algorithm, in which input is Latitude and Longitude of the specific location and the template of image say (roof top of a building) to be searched at that specific location and the output of the algorithm is the localization of the template area over big areal image. To identify the Latitude and Longitude of the specific area, various apps are available which provides the information about Latitude and Longitude by providing the area name. This information is useful to this algorithm for localization of the specific area

KEYWORDS: Image localization, Latitude and Longitude, Template Image.

I. INTRODUCTION

Using Google earth services, it is possible to enlist the Latitude and Longitude of the specific location very easily. Various apps are available for getting Latitude and Longitude of the specific locations. Various Google web services are also available for this purpose. Algorithm is proposed in which the area to be localized is mapped over the given large areal image by providing Latitude and Longitude of the specific location and the template of image say (roof top of a building) and the template of image say (roof top of a building) to be searched. Template may the small image showing the roof top of the specific building. And areal image must be larger image in which the template view is available at anywhere on the areal image.

Proposed algorithm can be used for identifying this type of area through satellite images with the use of Google earth services. With the use of Google earth services, we can get various snap shots of areal images with in the large range of area. Once we get the areal images the task remaining is to identify the target area called template over the large image. Localization of template over the large area is proposed in this paper.

II. LITERATURE SURVEY

Yang Long, Yiping Gong, Zhifeng Xiao, and Qing Liu et.al [1], introduced the tackling the problem of automatic accurate localization of detected objects in high resolution remote sensing images. The difference between object detection and object localization is subtle. Object detection focuses on detecting the presence of entire objects. But object localization has higher requirements than object detection does. Object localization requires that objects be located accurately. They propose an accurate object localization framework for remote sensing images.

Amir Roshan Zamir and Mubarak Shah, et.al [2], Finding an image's exact GPS location is a challenging computer vision problem that has many real-world applications. In this paper, address the problem of ending the GPS location of images with an accuracy which is comparable to hand-held GPS devices. First, each image is localized individually; then, the rest of the images in the group are matched against images in the neighboring area of the found match. The location is determined based on the Localization parameter. The proposed image

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group localization method can deal with very unclear queries which are not capable of being geo located individually. In this paper we addressed the problem of ending the exact GPS location of images.

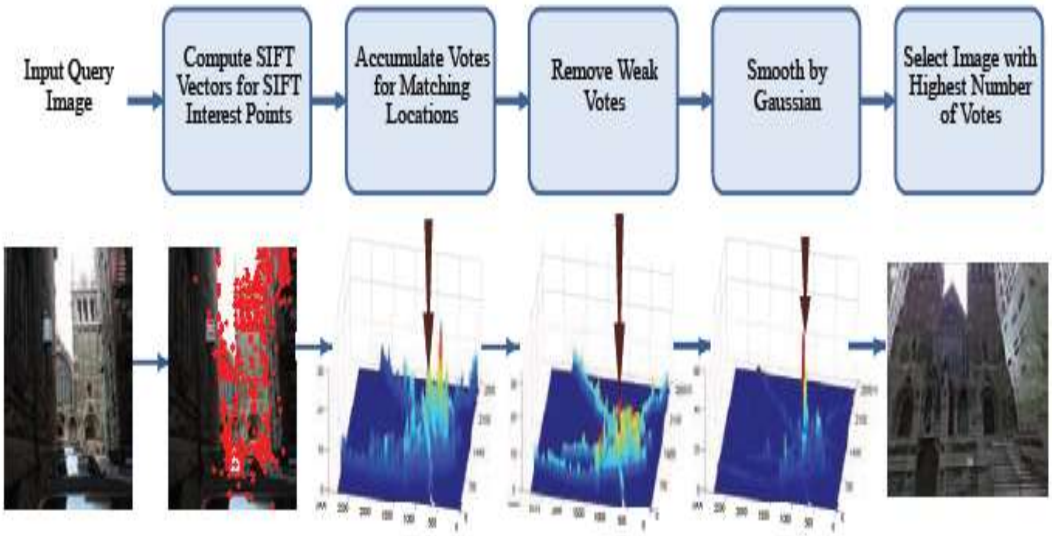

Fig.1: Block diagram of localization of a query image

Zheng Wang & Faisal Z. Qureshi et.al [3],developed it is possible to geo-localization images using existing geo-tagged images by exploiting visual similarities between the query images and one or more geo-tagged images. Zamir and Shah presented a system capable of using low-level image features to geo-localize an image using Google Maps Street View data. Our method learns a topic model over the reference database, which in turn is used to divide the reference database into scene groups. Each scene group consists of "visually similar" images as determined by the topic model. We present a method for partitioning a geo-tagged reference image database into scene groups.

Georgios Floros, Benito van der Zander, and Bastian Leibe et..al [7], describe Localization is an important component regarding the stability of such systems and thus its precision and robustness is of high importance. Current localization methods rely mostly on GPS information. However, GPS signals are not always available (e.g., inside narrow streets) and are usually only accurate up to a range of several meters. To overcome this problem, several authors have proposed to use image information from camera systems mounted on top of the vehicles.

They have presented a novel approach for globally localizing a vehicle's position. Our approach combines a classical visual odometry pipeline with map data from Open Street Maps in a unified framework, achieving improved performance on a set of challenging sequences. We have described the algorithmic and implementation details of our method and they have thoroughly evaluated it using data from a demanding benchmark. Our results show that the proposed system is able to provide fully automatic global localization at a low infrastructural cost (only street graphs are necessary) and that it is able to stabilize odometry against drift over long travel distances. In the future we plan to further investigate the use of maps to facilitate several other tasks, such as understanding of the environment and benefiting from the large amount of additional information that is stored in such maps.

Tsung-Yi Lin and Serge Belongie & James Hays et.al[8], discusses Consider the photos in below Figure. How can we determine where they were taken? One might try to use a searchby- image service (e.g., Google Images) to retrieve visually similar images. This will only solve our problem if we can find an instance-level match with a known location. This approach will likely succeed for famous landmarks, but not for the unremarkable scenes in below Figure. If instead of instance-level matching we match based on scene-level features, in this paper, take a small step in this direction by exploiting two previously unused geographic data sets – overhead appearance and land cover survey data. For each of these data sets, must learn the relationship between ground level views and the data.

Akihiko Torii & Josef Sivic & Tomas Pajdla et.al [12], presented the image-based localization task as a regression problem on an image graph and developed a two stage repressor, which takes advantage of the graph structure of the database. We have shown that considering linear combinations of descriptors along edges in the image graph significantly improves matching accuracy over the standard nearest neighbor matching. They formulate the image-based localization problem as a regression on an image graph with images as nodes and edges connecting close-by images; also design a novel image matching procedure, which computes similarity between the query and pairs of database images using edges of the graph and considering linear combinations of their feature vectors.

Yannis Kalantidis ,Giorgos Tolias, Yannis Avrithis, Marios Phinikettos , Evaggelos Spyrou , Phivos Mylonas , Stefanos Kollias et.al [13], compactly represent the visual content of all thousands of images depicting e.g. the Parthenon and still retrieve any single, isolated, non-landmark image like a house. Starting from an existing, geo-tagged dataset, we cluster images into sets of different views of the same scene. This is scalable, and fully automated mining process. They align all views in a set to one reference image and construct a 2D scene map. They have combined both, along with a novel scene representation that is directly encoded in our retrieval engine. The result is a considerable increase in retrieval performance, even compared to query expansion methods, at the cost of a slight increase in query time. Images in community photo collections have scaled to billions over the last few years. Searching into such huge collections traditionally depends on text and other community generated data; state-of-the-art visual image retrieval has not yet scaled enough. On the other hand, a number of data mining and clustering approaches have emerged that exploit data like location, time, user (photographer) and tags. Such approaches typically focus on popular subsets where visual representation can indeed help, e.g. images containing landmarks or associated to Wikipedia1 articles.

III. PROPOSED SYSTEM

The proposed system is image searching is required for localization and analysis of specific area over the areal image. Image localization provides the location of places over the specific image and image registration means the localization of template image over large image through localization, image warping of template image for exact matching like the identified image over the large image. This application requires the localization of template over the large image called areal image. For localization and analysis of specific area over the areal image, Google earth image searching is proposed which may be useful for automatic calculation of area over the specific location on the Google earth.

It is required to know about the rooftop area useful for holding solar panels. Proposed algorithm can be used for identifying this type of area through satellite images with the use of Google earth services. With the use of Google earth services, we can get various snap shots of areal images. To identify the Latitude and Longitude of the specific area, various apps are available which provides the information about Latitude and Longitude by providing the area name. This information is useful to this algorithm for localization of the specific area.

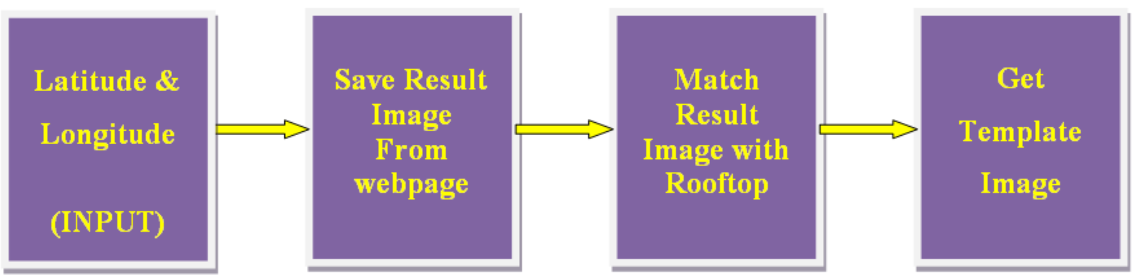

Fig.2 Proposed System for Image Localization

By providing Latitude and Longitude of the specific location and the template of image say (roof top of a building) and the template of image say (roof top of a building) to be searched. Template may the small image showing the roof top of the specific building. And areal image must be larger image in which the template view is available at anywhere on the areal image.

IV. CONCLUSION

Localization of Google earth image is proposed for template matching. The results show the validation of two algorithms proposed in this work. Getting Google earth image corresponding to given Latitude and Longitude is a specific work performed in this work. Template matching is also the main task performed to identify the exact location. Proposed system provide required image to user and he can highlight portion which he required. Also this system proposed in future point of view that the zoom level of required highlight portion can be adjusted.

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