Village Geographical Information System

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***Abstract*- India has a big number of villages 68.84% of Indians (around 833.1 million people) live in 640,867 different villages. Villages need to have a complete database and an information system that is easily used to serve the needs for their development and support public services. The approach in building a database and village information system model can be analogous to a large number of villages and using open source software. Based on the literature of information technology and geographic information system (GIS) with a simple, inexpensive and easy development model as part of smart village program that enables the village to increase the performance of the village administration, public service, and development of data for their development and support public services. Demographic information like Changing number of births , deaths and diseases in village is not available or may be in irregular graph or format , As time changes data will grow more and more For example, to find information of residence of a region still use manual data search system one by one and this manual search will take enough time. Villages need geographic Information system that can facilitate citizens and government bodies. Geographic information system and has the ability to connect various data at a certain point on the earth, combine it, analyze it and eventually map out the results through Data mining and analysis, So GIS applications can answer some questions such as location, condition, trend, pattern and modelling.**

***Index terms*- Geographic Information System, Data mining and analysis, Information Technology, Demographic Information, Smart village**

I.INTRODUCTION

The advancement of data and correspondences innovation to date has been moving quickly with the nearness of developments identified with data frameworks that become a need in many parts of life. In this manner, the soul of globalization expands the earnestness of using data and correspondence innovation in worldwide life. [1] It cannot be isolated from the requirements of India itself in the use of data and correspondence innovation, particularly on the arrangement of successful and effective open administrations with denoted the nearness of e-government (electronic government). E-government is the utilization of data and correspondence innovation and applications by government and related foundations from top to base level so as to give data and open administrations for citizens [2].

One of the focal point of the advancement of E-Government is the use of data innovation that expects to improve the quality and amount of open administrations gave to the network, in light of the fact that not a couple of open administrations are utilizing manual framework so for Servicing takes quite a while, particularly open administrations in rustic zones. To discover the populace data, particularly the mapping of regions what's more, regional limits, townspeople think that it's troublesome in light of the fact that there are no offices or applications that make it simple to discover data about nearby residents. So if the townspeople need to know the limits of the domain, the mapping of the populace and the land proprietorship, residents should look for data legitimately to the town office workers. E-Government data innovation is one of the advancement of Smart Village, right now program to manufacture geographic data framework utilizing geographic mapping framework plan and to encourage in the search of outskirt region data, populace mapping and land proprietorship utilizing online guide see. In view of the issues that have been submitted, shaped an answer for structure and execute an electronic geographic data framework which is required to encourage town heads, town authorities and residents Villages to find geographic territory limits and geographic mapping utilizing electronic computerized maps.

A. Problems

In light of the depiction of the above foundation then the plan of the issue right now, others: the most effective method to get locals to know the mapping

data of a area effectively so they don't need to search for segment mapping data physically

B. Purpose

The motivation behind this exploration are:

1. Planning geographic data framework use of mapping region to deliver segment mapping data with web map based advanced guide.
2. Actualize the application in Village so that townspeople can get data about limits, mapping of populace information introduced as advanced guide structure.

II. LITERATURE SURVEY

BelgaonDhaga is village in City Nashik and Country India, we have visited city number of times and what we analyzed there and what problems that should be solved, Some of the main fields that we had to focus to solve the problem and to find the solutions are explained below

A. Smart village

BelgaonDhaga Village is a use of trend setting innovation in horticulture which fathoms a progression of specialized obstacles in data innovation for wide region, productive and dependable information transmission under coordinated framework. It goes about as an impetus for the change from conventional proactive cultivating to current farming.[3] Brilliant Village is a town based Information and Correspondence Technology (ICT) advancement and execution idea as a mind boggling cooperation between different frameworks inside it. Brilliant Village is more accentuation on parts of social change, strengthening, autonomy, fellowship, and manageability where in it initially inspect what's more, focus on goals of the requirements of offices to help ease as far as administration framework in the village.[2]

B. Smart economy

Economy is one of the columns supporting the locale. Monetary administration of an area ought to be improved what's more, modernized. Financial aspects isn't just identified with the merchandise and ventures gave, yet in addition development, seriousness, instruction, and business enterprise. Brilliant Town's execution and appraisal on Smart Economy covers two things: development process and competitiveness.[2]

C. Smart people

Shrewd individuals can be said as the primary objective that must be satisfied in acknowledging Smart Village. Right now is a foundation of the procedure of innovativeness in human and social capital, in such a case that the state of society has become keen, at that point the establishment to understand the savvy town will be accomplished.

D. Smart governance

Brilliant administration is a piece of the Smart Village that has some expertise in administration. Brilliant Governance covers all terms, criteria, and goals for the procedure of strengthening and cooperation of the network and government together. The presence of participation between government and society is relied upon to understand the administration and the method for spotless, genuine, just and majority rule government.[2]

E. Smart mobility

Shrewd Mobility is a piece of the Smart Village that works in the transportation and portability of the network. In Smart Mobility there is a shrewd transportation and portability process, so it is relied upon to make open administrations for better transportation and portability what's more, expel normal problems.[2]

F. Smart environment

Brilliant Environment is a piece of Smart Village that has practical experience in how to make a brilliant situation. The appraisal criteria here incorporate a procedure of maintainability also, better asset the executives. To understand the Smart Condition, there should be an assortment of applied applications and computers.[2]

III. SYSTEM IMPLEMENTATION

System Implementation is the development of the research that we made, here mentioned things which are required to develop application for fulfilling requirements.

A. Context Design

Context Design of the System is as mentioned in the figure (1), we can see that there Admin having facilities to add data to particular marker so that at the time sorting of data it will exactly point out the location where data belongs to.

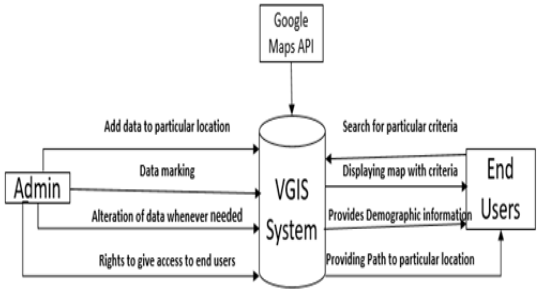

Fig -1: Context Design of System

Admin also having access to alteration of data if any changes and obviously only admin will have access for this. Google Maps API are integrated with system so can create our custom map. End Users are the people who are going to use this application. They are having facilities to search for criteria and they will get sorted data and map with highlights locations.

B. Geographic Information System (GIS)

All in all, the idea of GIS is a segment comprising of equipment, programming, geographic information and human assets that cooperate adequately to enter, store, fix, update, oversee, control, incorporate, break down and Showing information in a topographically based data. Topographical information is huge (in number and size) and comprises of many interrelated themes.[4] GIS can interface different information at a certain point on the earth, consolidate it, break down it and in the long run outline the outcomes. The information to be handled in the GIS is spatial information is a topographically arranged information and is a area that has a specific arrange framework, as the reference base. So GIS applications can answer a few questions, for example, area, condition, pattern, design and demonstrating. This capacity recognizes GIS from other data systems.[4] It has been clarified toward the starting that GIS is a bound together framework comprising of different parts, not just PC equipment and programming yet in addition appropriate geographic information and HR to play out its job in planning furthermore, breaking down issues that decide the achievement of GIS.[4]

C. Google Maps API

Google API is a piece of the Google system, and Google gives different APIs. Programming interface (Application programming interface) is one of programming capacity gave by application or administration so administration can be incorporated with application that we make. While Maps API is one of the highlights of Google API that uses the current usefulness in Google Maps. So Google Maps API is the programming capacities gave by Google Maps to be coordinated into the Web or applications that are being made by using the capacities that are on Google maps. A Google map API is a Google administration that is utilized for nothing, its utilization doesn't have to pay for licenses. Just, most extreme guide demands permitted as it were 2500 solicitations/every day. On the off chance that more than that, be required to buy a Google Maps API for Business permit. In making the Google Map API program utilize the accompanying request:

1. Insert JavaScript Maps API into HTML.[5]
2. Create a div element with map_canvas name to display the map.
3. Create some literal objects to store properties on the map.
4. Write a JavaScript function to create a map object.
5. Initiate the map in the HTML body tag with the download event.[5]

A. Database

The Google Maps JavaScript API lets you render information contained in Google Fusion Tables as a layer on the guide utilizing the Fusion Table Layer object. The Google Fusion Table is a database table whose lines contain information about certain highlights for geographic information, each line in the Google Combination Table not withstanding containing area information, too as putting away element position data. Fusion Table Layer gives an interface to Fusion Tables and supports programmed rendering of this area information, by giving interactive overlays highlighting extra information on this highlight.

Location columns must follow the formatting requirements as below

1. Latitude / longitude coordinates can be entered in a single column, separated by a comma (latitude,

longitude) or can be divided into two columns (one column for latitude and one for longitude).
2. Address must be geocode first. In the Fusion Tables web interface, choose File> Geocode.
3. KML geometry data such as dots, lines, and polygons

B. Decision Tree Algorithm

We have used Decision Tree algorithm for classifying the query which is inputted by user for searching on the map. It is a non-parametric supervised learning method that can be used for both classification and regression

Let's take example refer to our project, Suppose we want to search for a children's who are under 5 years in female then we are using this algorithm, first algorithm will search for Gender where they are classified as Female and male then algorithm will direct true to female, then again female age is classified as <5 years and >5 years if it gets <5 years then algorithm will display data according to the query. This is how decision classifier is going to work.

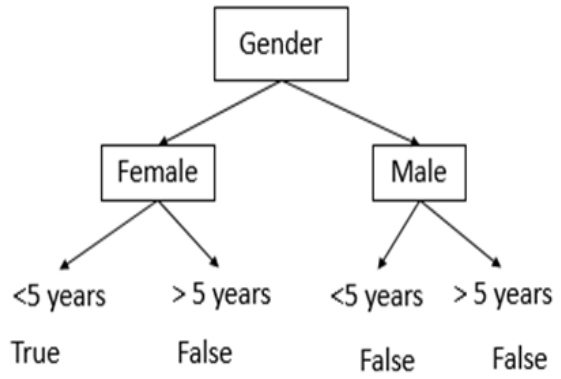

Fig -2: Decision Tree classifier

C. Google Map Clustering Algorithm

As we will be having lots of data which will be placed on map at exact location. Location is calculated using longitude and latitude where related data is place and we can access that data using marker for each house. So to get rid of this problem Google map provided algorithm called as Google Map clustering algorithm. Map clustering Algorithm used as combination with the Maps JavaScript API to combine markers of close proximity into clusters, and simplify the display of markers on the map.

There are steps to add marker cluster:

1. Get the marker clustering library and images from GitHub, and store them on a server accessible to your app.
2. Add the marker clustering library to our page.
3. Add a marker clusterer in your app.

```
var markerCluster = new MarkerClusterer (map,
markers, {imagePath:
'https://developers.google.com/maps/documentation/javascript/examples/markerclusterer/m'});
```

IV. CONCLUSIONS

This system can facilitate government audit bodies and villagers. From Village Geographical Information System village administration performance can be improved, can easily monitor and locate village population information with digital mapping. This application used to get rid from manual working of auditing in villages. It can be easily implemented because it does not require any prerequisites which can create problem. Application can answer some questions such as location, condition, trend, pattern and modelling.

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