MAP SYNTH

"GIS (Geographic Information System) based Interactive Global Information Platform (GIP) for Enhanced Navigation and Data Visualization."

PROJECT ID (PCSE25-35)

PROJECT SYNOPSIS

OF MAJOR PROJECT

BACHELOR OF TECHNOLOGY
CSE

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INTRODUCTION

Geographic information system (GIS) is one that collects, organizes, processes, and maps all kinds of locations on the surface of the Earth. Streets, buildings, and plants can all be displayed on a single map using GIS. People are better able to recognize, evaluate, and comprehend patterns and relationships as a result. In our connected world the demand for navigation and visualizing data has become incredibly important. The project named "GIS (Geographic Information System) based Interactive Global Information Platform (GIP) for Enhanced Navigation and Data Visualization" aims to meet this demand by developing a user focused platform that allows individuals to make custom points for showing different locations according to their choice and explore and interact with information in innovative ways. By leveraging GIS capabilities this project offers a solution for both individuals and organizations seeking navigation tools and effective data representation.

PROJECT OVERVIEW:

At its core this project centers around creating a Global Information Platform (GIP) that maximizes the potential of GIS technology to improve navigation and data visualization. Users will have the opportunity not to explore maps and geographical data but to contribute their own insights by adding custom points that represent different locations of interest. These personalized points will serve to preferences ranging from landmarks to business locations resulting in a diverse and enriching mapping experience.

TECHNOLOGY UTILIZED:

The project utilizes cutting edge GIS technologies and frameworks to ensure a user-friendly experience. By utilizing libraries, like Mapbox, Leaflet or the Google Maps API the platform will seamlessly integrate with user's devices. It will have a design. Work well across different devices. The backend of the platform, which could be developed using Node.js or Python, will provide the power needed to ensure reliable performance.

FIELD OF PROJECT:

Although useful in many different sectors, this project specifically benefits individuals who need precise and scalable geographic information for navigation and data presentation. The project's capacity to combine user-generated insights with pre-existing spatial data layers can be useful for sectors including urban planning, tourism, logistics, and environmental monitoring.

RATIONALE

The primary goals and advantages of the suggested project are encapsulated in the title "GIS (Geographic Information System) based Interactive Global Information Platform (GIP) for Enhanced Navigation and Data Visualization." Here is a thorough justification for this title:

- Incorporating GIS Technology: The fundamental technology being used is indicated by the word "GIS (Geographic Information System)" at the beginning of the title. GIS is a well-known system for gathering, conserving, processing, and displaying geographic data. It makes it clear that the project is concentrated on managing geographic and spatial information.
- Interactive Design: The word "Interactive" underlines that the platform is dynamic and intended to actively engage users. Users can manipulate and explore geographic data actively through interaction, which encourages engagement and improves the user experience.
- Enhanced Navigation: The project's goal of enhancing user navigation and interaction with geographic information is indicated by the usage of the highlighter "Enhanced Navigation". This could contain functions that improve the user's ability to successfully traverse their surroundings, such as enhanced routing, real-time updates, and tailored navigation options.
- Information Platform: The project's designation as a "Information Platform" suggests that it is more than just a mapping tool. It implies that the platform is an all-encompassing tool for obtaining, disseminating, and evaluating all kinds of information, not simply maps. This demonstrates the platform's adaptability and usefulness.

OBJECTIVES

1. Create a user-friendly GIP for global navigation.
2. Enhance data visualization through GIS integration.
3. Provide real-time, location-based insights.
4. Include a feature that lets users add their own points to the map.

LITERATURE REVIEW

[1]: Analysis of Visualization Technology of 3D Spatial Geographic Information System.
The three-dimensional geographic information system described in this paper's data processing optimization algorithm and visual optimization algorithm illustrate the drawbacks of the conventional algorithm's ineffective data processing and inadequate visual rendering. Based on this technique, an optimization algorithm is created. To improve the visual impact, GIS data from the school has been displayed as a geographical processing object on the goal-oriented data processing platform. In conclusion, this paper's suggested three-dimensional geographic information system visualization technique offers excellent benefits for both processing and visualizing data.

[2]: Integrating Geographic Information Systems and Augmented Reality for Mapping Underground Utilities.
For mapping subsurface utilities, the combination of GIS, augmented reality, and cloud-based solutions (XR-GIS) offers a novel strategy for improving data availability and use. The effectiveness of XR-GIS in enhancing utility mapping procedures is evaluated in this study. Real-time data gathering and transmission on construction sites are made possible by the system's successful integration of AR, GIS, and mobile technology. Utilizing Google Earth and cloud-based storage, data is analyzed, visualized, and stored. Utilizing open platforms for real-time communication and GPS coordination is the intellectual contribution. Centralized utility databases, real-time utility registration, information exchange, and improved construction worker knowledge are some future research objectives. This strategy represents the industry's transition to cloud-based communication and management.

[3]: Research on the Application of Geographic Information System in Tourism Management.
The growth of tourism not only requires its own information management and interchange, but also must adapt to the needs of the entire society in terms of both economic development and information. The application of GIS to tourism management is a necessity for tourism management and development. Tourism management is faced with new issues because of the advancement of current information technologies. The question of how to fully utilize GIS in tourism management in this situation is crucial for improving tourism management's ability to respond to the needs of information development. It needs constant, in-depth discussion and research.

[4]: A Survey of GIS and IoT Integration: Applications and Architecture.
This paper examines studies on IoT and GIS that achieve two objectives, namely:
(1) assessing the function of each technology alone and together by classifying the studies into seven application domains, and
(2) examining how GIS is involved in IoT design. GIS can be used in IoT-based systems by considering the three primary applications known as data-source, visualization, and analysis tools. Additionally, GIS is a good option for tackling numerous difficulties due to its capacity to deal with geospatial data and properties and real-time data gathering and monitoring.

[5]: GIS based identification and visualization of multimodal freight transportation catchment Areas

This research paper introduces a novel methodology for defining multimodal freight catchment areas using vehicle tracking data. The analysis accurately determines the impact of freight facilities by correlating data to networks. The method's importance in comprehending intricate freight interconnections is shown by comparison with conventional radial perimeter techniques. A geospatial fusion method that consistently identifies freight-sheds, assisting in project prioritizing, is the contribution. The case study highlights the importance of the strategy, particularly for ports on inland waterways. This technique can be used in a wide range of locations and facility types since it makes use of the tracking data that is becoming more widely available.

FEASIBILITY STUDY

Several elements support the viability of creating a GIS-based Interactive Global Information Platform (GIP) with unique point functionality for improved navigation and data display. First, a solid foundation for developing interactive mapping platforms is provided by the availability of cutting-edge Geographic Information System (GIS) technologies and libraries like Mapbox, Leaflet, and Google Maps API. Second, a user base that is open to using such a platform is indicated by the rising desire for customized navigational experiences and data visualization tools. Finally, the project's scope is in line with current developments in user-driven applications and spatial data processing, making it technically feasible within a realistic timeline.

NEED:

1. A desire for a more individualized, educative, and participatory approach to geography and navigation.
2. User-centric customization possibilities are lacking in conventional navigation systems.
3. It can be difficult to see complex geographic data, which hinders the ability to make wise decisions.

SIGNIFICANCE:

1. Users can mark their own landmarks and areas of interest, creating a unique navigational experience.
2. Provides practical applications across sectors such as urban planning, logistics, tourism, and research.
3. Ensures accessibility for a large audience with a user-friendly interface.
4. Improves global data-driven decision-making and navigational experiences.

METHODOLOGY/ PLANNING OF WORK

Overview: We are using CSS (cascading style sheets), React.js, jQuery and HTML for making custom pointer in maps. We are using different angle and multiple filtered images to enhance quality in maps. We are using Javascript, Java, Python, mangodb, CSS, HTML and MySQL to make maps for Android apps, IOS apps and web development.

METHODOLOGY OF MAKING CUSTOM POINTER AND ENHANCING IMAGES IN MAP

To make a custom pointer and enhance images in a map, you can follow these steps:

1. Create a new image file that will be used as the custom pointer. The image file should be in PNG or JPEG format and have a size of 256x256 pixels.
2. Design the custom pointer image. The image can be anything you want, but it should be clear and easy to see.
3. Save the custom pointer image file.
4. Open the map file that you want to add the custom pointer to.
5. In the map file, find the section that defines the pointers.
6. Add the following code to the pointer definition: (JS code)

```
pointer: {
  customImage: "path/to/custom/pointer.png"
}
```

   Replace path/to/custom/pointer.png with the path to your custom pointer image file.
7. Save the map file.

To enhance images in a map, you can use the following techniques:

- Increase the contrast of the image. This will make the image elements stand out more.
- Adjust the brightness and saturation of the image. This can help to improve the overall appearance of the image.
- Apply a filter to the image. This can be used to add a specific effect to the image, such as sepia or black and white.

FACILITIES REQUIRED FOR PROPOSED WORK

We can use a variety of image editing software to perform these tasks. Some popular options include Adobe Photoshop, GIMP, and Paint.NET.
Here are some additional tips for making custom pointers and enhancing images in maps:

- Use clear and simple designs for your custom pointers. The pointer should be easy to see and understand, even at a small size.
- Use high-quality images for your custom pointers. This will help to ensure that the pointer looks good on the map.
- Test your custom pointers on different maps before you use them in production. This will help you to make sure that they look good in different contexts.
- Be creative with your custom pointers. There are no limits to what you can create. Have fun and experiment

HARDWARE REQUIREMENT:
Laptop/Desktop with processor 11th generation (I3 /15)
Installed RAM: 8 GB
System type: 64-bit Operating System

EXPECTED OUTCOMES

The project's anticipated results span a variety of areas. These include GIP's successful launch, enhanced user navigation experiences, expanded data visualization capabilities, increased accessibility to geographic data worldwide, and the potential for favorable social effects. The adoption and impact of the platform will be evaluated, and any potential new features or expansions will be considered.

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