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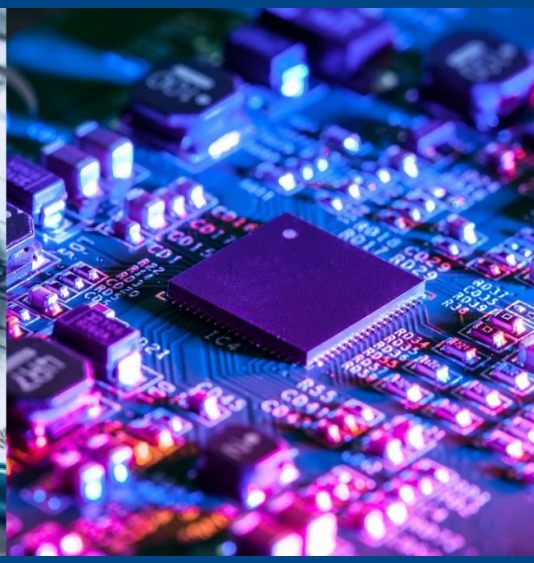

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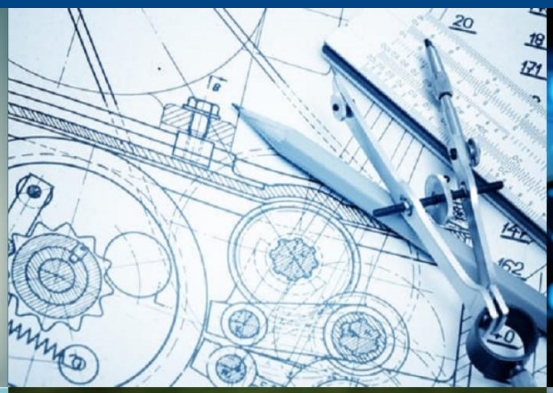

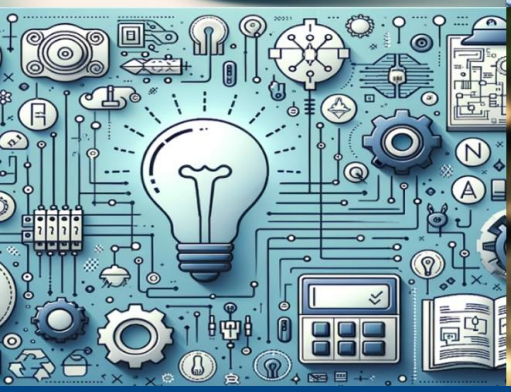

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Application of OpenStreetMap and MapTiler for Locale Exploration using Geospatial Intelligence

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ABSTRACT: Location viewing has been revolutionized with improvement in geospatial intelligence. Use of OpenStreetMap (OSM), MapTiler, and Leaflet.js to facilitate the exploration of localities through maps is the focus of this paper. Leveraging open-source mapping information and editable map tiles, the user can learn more about attractions, hotels, and restaurants of the place. The use of this tools in combination of final year MERN Stack project HistoryScope is thus useful for smart tourism.

KEYWORDS: OpenStreetMap, OSM, MapTiler, Leaflet.js, Geospatial Intelligence, Locale Exploration, Interactive Maps, Tourism, Cultural Heritage

I. INTRODUCTION

HistoryScope is an interactive travel companion designed to enhance exploration of locale or user input locations using geospatial intelligence. By integrating OpenStreetMap and MapTiler, HistoryScope allows users to visualize and interact with the locations with an intuitive mapping platform. This system provides detailed maps, and site-specific insights, making it a valuable tool for tourists, researchers, and history enthusiasts. HistoryScope leverages OSM's open-source geospatial data and MapTiler's map rendering capabilities enabling users access historical routes, landmarks, and cultural heritage sites with enhanced accuracy and accessibility

Fig 1: HistoryScope UI using OpenStreetMap and MapTiler

II. LITERATURE REVIEW

Numerous studies have highlighted the benefits of geospatial intelligence in tourism, navigation, and urban planning. OpenStreetMap has been widely used for community-driven mapping, while MapTiler has been applied in cases requiring customized visualization. HistoryScope builds upon this foundation by focusing on historical, cultural, recreational activity site visualization and data being fetched from RapidAPI's Travel Advisor API. Previous research

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has demonstrated the effectiveness of open-source mapping tools in improving accessibility and navigation experiences. However, challenges such as data accuracy, real-time rendering, and large-scale implementation remain areas for improvement.

III. METHODOLOGY OF PROPOSED SURVEY

The research methodology involves a qualitative and quantitative analysis of OpenStreetMap and MapTiler in locale exploration through HistoryScope. The steps include:

1. Data Collection: Extracting information from RapidAPI's Travel Advisor API for details like location photography, name of the location, location ratings, price range, and all the achievements that the place may have received.
2. Map Customization: Processing and rendering map tile of type raster tiles (i.e. png format tiles or images) using MapTiler.

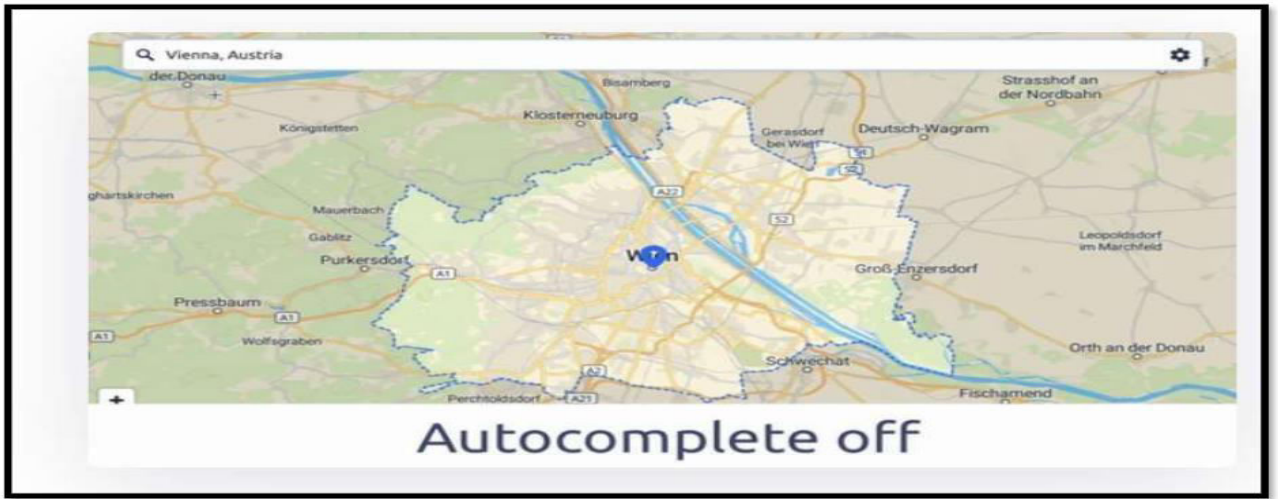

fig 2: UI before data is collected. User current location displayed.

3. Implementation: Developing and displaying an interactive user interface in HistoryScope that integrated OSM and MapTiler for displaying the information in card-like formatting in the left the pop-up like formatting on the map itself.

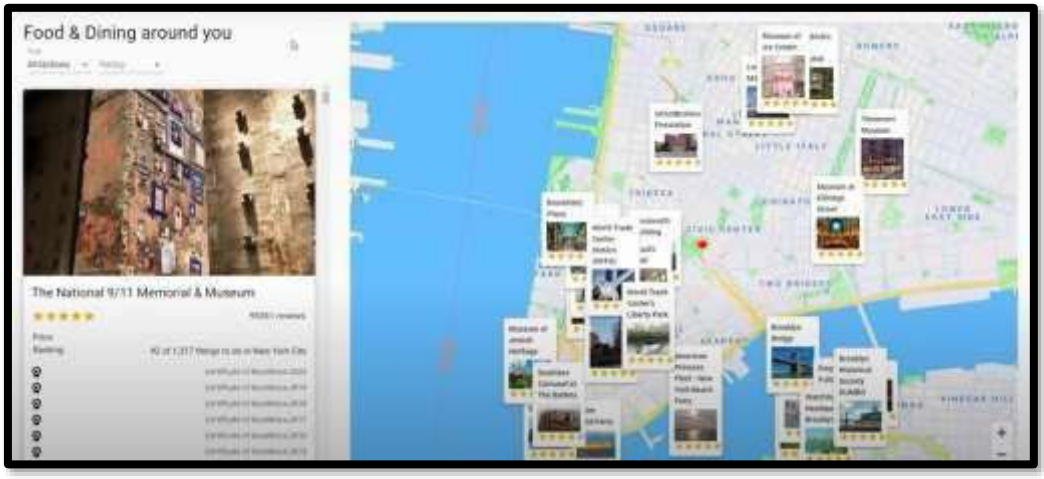

Fig 3: UI displaying information about Attractions in the locale of user-input location

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These findings highlight HistoryScope's effectiveness in utilizing geospatial intelligence for historical, cultural, and artistic studies, reinforcing the value of OSM and MapTiler in enhancing locale exploration.

IV. CONCLUSION AND FUTURE WORK

The implementation of OpenStreetMap and MapTiler in HistoryScope demonstrated significant improvements in locale exploration. Findings indicate:

- Enhanced accessibility to historical, and cultural sites through geospatial intelligence.
- Increased engagement with interactive map visualization.

OpenStreetMap, MapTiler, Leaflet.js, and Travel Advisor API, when applied in HistoryScope, offer an innovative approach to locale exploration. They enable interactive, customizable experiences for users, transforming tourism, research, and navigation. Future advancements in geospatial technology will further enhance these capabilities, making historical geospatial exploration more immersive and accessible.

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