Patent
on

Dental implantation of GPS trackers in Endangered Animals

Program Name: Industry Ethics and Legal Issues (CSE332)

Under the Guidance of Dr. Priyanka Mahajan(30758)

Submitted by

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1. Abstract

This patent puts forward a rather interesting idea to help conserve endangered species. Instead of using traditional, invasive methods to track these majestic creatures, the patent proposes something unique – The dental implantation of GPS trackers.Now, I know it might sound a bit unusual, but hear me out. The concept behind this approach is to insert GPS trackers into the dental structures of endangered species. Don't worry though, it's designed to be a non-invasive and safe procedure for the animals.By implanting these GPS trackers in the teeth of these amazing creatures, researchers can gather precise and continuous data about their movements, behaviors, and habitats. It's like giving them their own personal tracking device that doesn't cause them any harm.The patent goes into detail about the technology and hardware required for this implantation method. They've really thought it through to ensure that this technique is reliable and effective across different species.The best part is that this new approach reduces the stress and potential harm that traditional tracking methods often cause. It's a win-win situation for both the animals and the researchers involved in wildlife conservation efforts.With the dental implantation of GPS trackers, we can gain valuable insights into how endangered species utilize their habitats and face challenges in the wild. This information can greatly contribute to their protection and the preservation of their natural environments.So, while it may seem like an unconventional idea at first, this patent opens up exciting possibilities for wildlife monitoring and conservation. It's an innovative step towards safeguarding endangered species and making a positive impact on their survival.

2.Techniques used

We have used Python libraries folium and geocoder to fetch and display the current location based on the IP address.

1. The geocoder library is used to fetch the current location based on your IP address. By calling geocoder.ip('me'), it retrieves the location information.

2. The latitude and longitude coordinates of the fetched location are extracted using if g.latlng: latitude, longitude = g.latlng. If the location information is available, it assigns the latitude and longitude to the respective variables.

3. Using folium, a map is created and centered on the fetched location by calling folium.Map(location=[latitude, longitude], zoom_start=10).

4. A custom marker is created and added to the map to pinpoint the current location. The marker is customized with a blue color and an "info-sign" icon using folium.Icon(color='blue', icon='info-sign'). The location details are added as a popup text including the location name and the latitude and longitude coordinates.

5. A terrain layer is added to the map for context using folium.TileLayer('Stamen Terrain').

6. Finally, the map is saved as an HTML file called "current_location_map.html" by calling m.save('current_location_map.html').

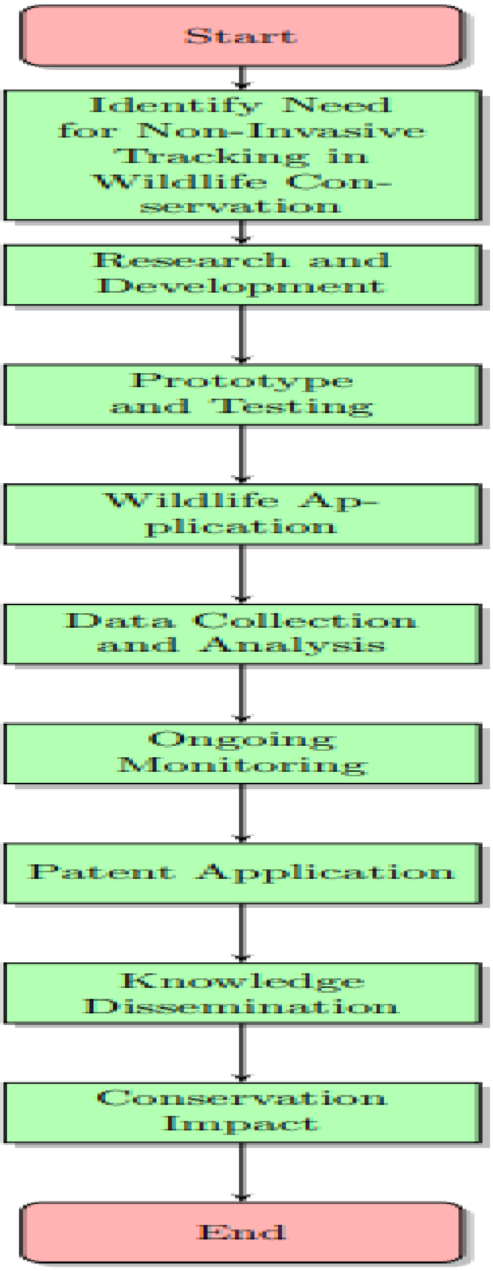
Overall, this technique combines the geocoder library to fetch the current location and the folium library to create an interactive map with a custom marker and location details.

2.a Datasets Explanation

Dataset link: Species List | Endangered, Vulnerable, and Threatened Animals | WWF (worldwildlife.org)

The dataset is a directory of species that are under the care and monitoring of the WWF, an international conservation organization. It provides information about various species, their status, and details related to their conservation efforts. The data can be sorted by different criteria, including extinction status, and the user can choose to sort the data in ascending or descending order.
Class, Habitat, Diet, and Life Span of Endangered Animals The specific information about the class, habitat, diet, and life span of endangered animals can vary widely based on the individual species. Each species has its own unique characteristics and requirements. The class of an animal refers to its taxonomic classification, such as mammals, birds, reptiles, amphibians, or fish. The dataset should provide this classification for each species. Habitat information describes the natural environment or type of ecosystem where a species is typically found. Endangered animals can have various habitats, including forests, grasslands, oceans, rivers, and more. Diet information specifies the types of food that an animal consumes, which can vary from herbivores (plant-eaters) to carnivores (meat-eaters) and omnivores (eating both plants and animals). Life span refers to the average or typical age an animal of a particular species can reach in the wild. The dataset allows users to sort species based on their extinction status. The extinction status can include categories such as "Endangered," "Critically Endangered," "Vulnerable," and "Near Threatened." This information indicates the risk level a species faces in terms of becoming extinct.The dataset may include details about the geographic range of each species, indicating the regions or countries where they are typically found. Some species may have a wide range, while others are more localized. Information on population trends can reveal whether a species' numbers are increasing, stable, or declining. This data is crucial for understanding the overall health of a species.

3.Workflow Diagram



4. Coding Snapshot

```
import folium
import geocoder

g = geocoder.ip('me')

if g.latlng:

    latitude, longitude = g.latlng

else:

    print("Location information not available.")

m = folium.Map(location=[latitude, longitude], zoom_start=10)

icon = folium.Icon(color='blue', icon='info-sign')

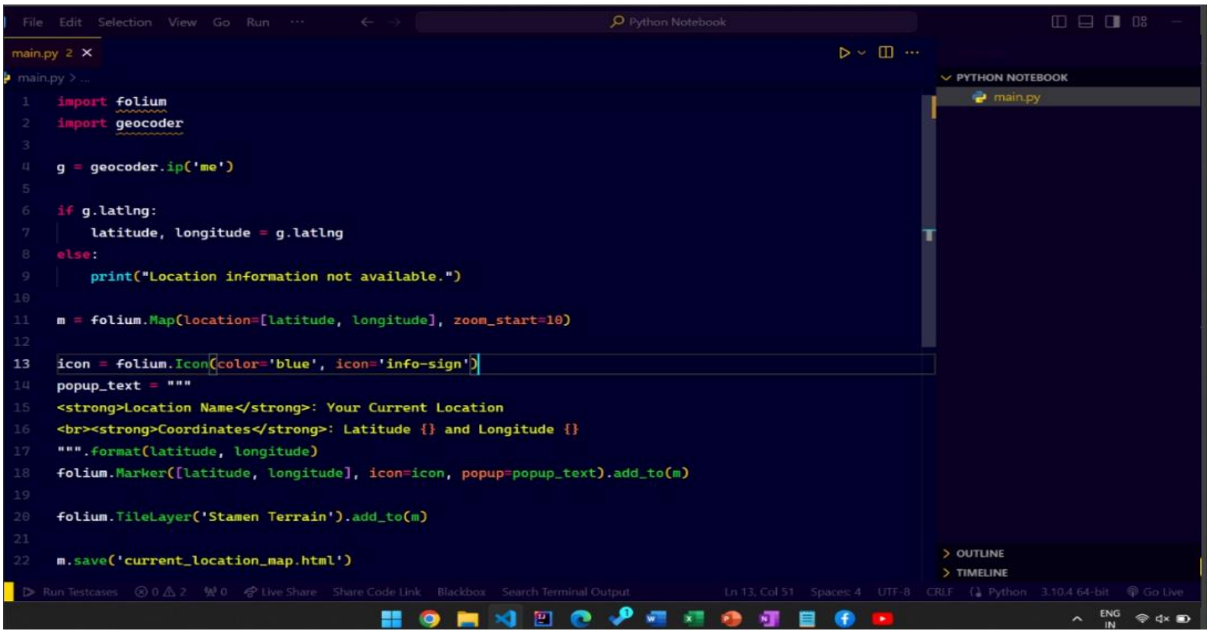
popup_text = """

<strong>Location Name</strong>: Your Current Location
<br><strong>Coordinates</strong>: Latitude {} and Longitude {}
""".format(latitude, longitude)

folium.Marker([latitude, longitude], icon=icon, popup=popup_text).add_to(m)

folium.TileLayer('Stamen Terrain').add_to(m)

m.save('current_location_map.html')
```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main.py
OUTLINE
TIMELINE
Run Testcases ⊗ 0 ⚠ 2 0 Live Share Share Code Link Blackbox Search Terminal Output Ln 13, Col 51 Spaces: 4 UTF-8 CRLF Python 3.10.4 64-bit Go Live
ENG IN

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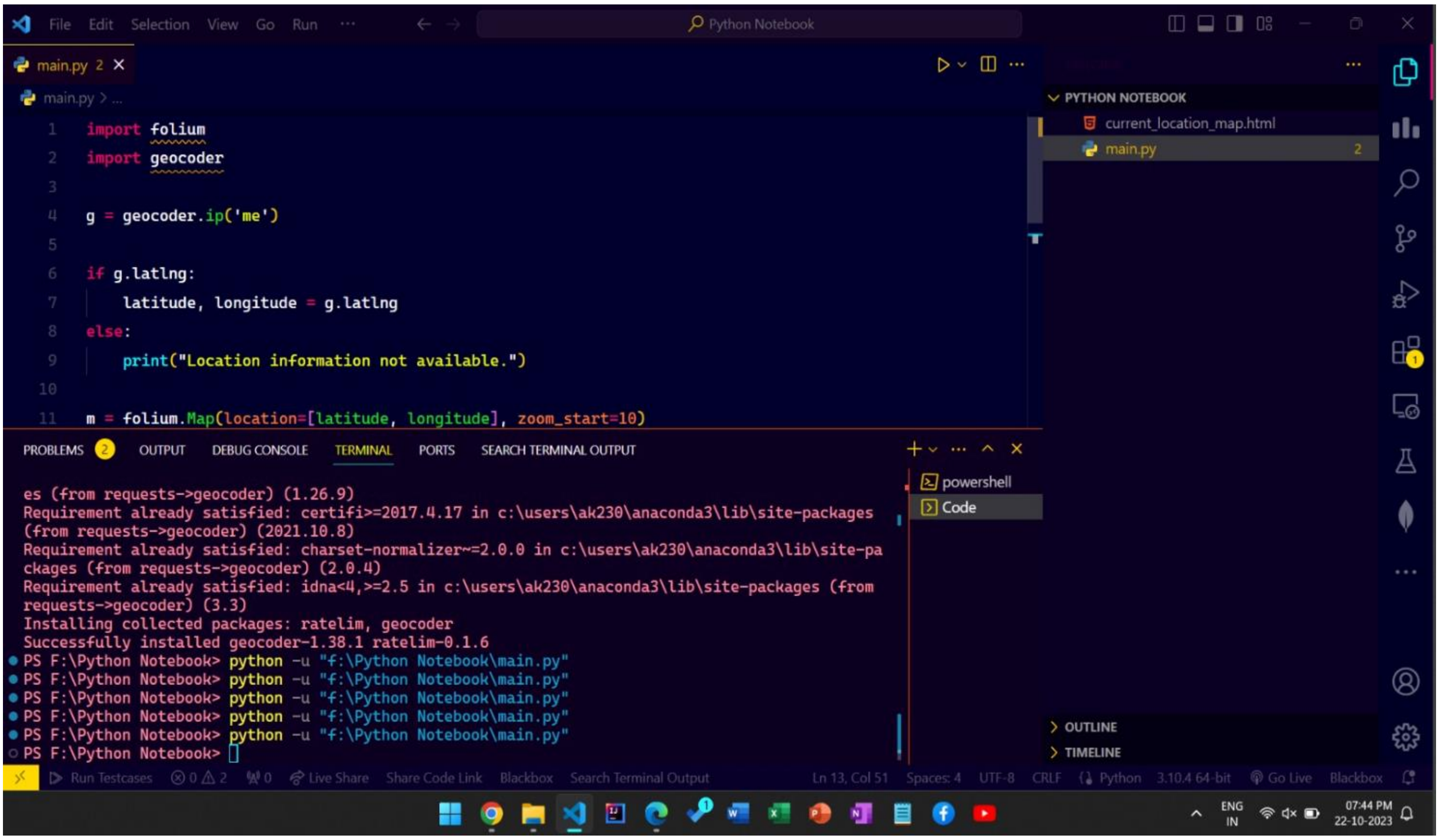
```

5. Outputs Snapshots



```python
import folium
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g = geocoder.ip('me')

if g.latlng:
    latitude, longitude = g.latlng
else:
    print("Location information not available.")

m = folium.Map(location=[latitude, longitude], zoom_start=10)
```

```
es (from requests->geocoder) (1.26.9)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\ak230\anaconda3\lib\site-packages
(from requests->geocoder) (2021.10.8)
Requirement already satisfied: charset-normalizer~=2.0.0 in c:\users\ak230\anaconda3\lib\site-pa
ckages (from requests->geocoder) (2.0.4)
Requirement already satisfied: idna<4,>=2.5 in c:\users\ak230\anaconda3\lib\site-packages (from
requests->geocoder) (3.3)
Installing collected packages: ratelim, geocoder
Successfully installed geocoder-1.38.1 ratelim-0.1.6
PS F:\Python Notebook> python -u "f:\Python Notebook\main.py"
PS F:\Python Notebook> python -u "f:\Python Notebook\main.py"
PS F:\Python Notebook> python -u "f:\Python Notebook\main.py"
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PS F:\Python Notebook>
```
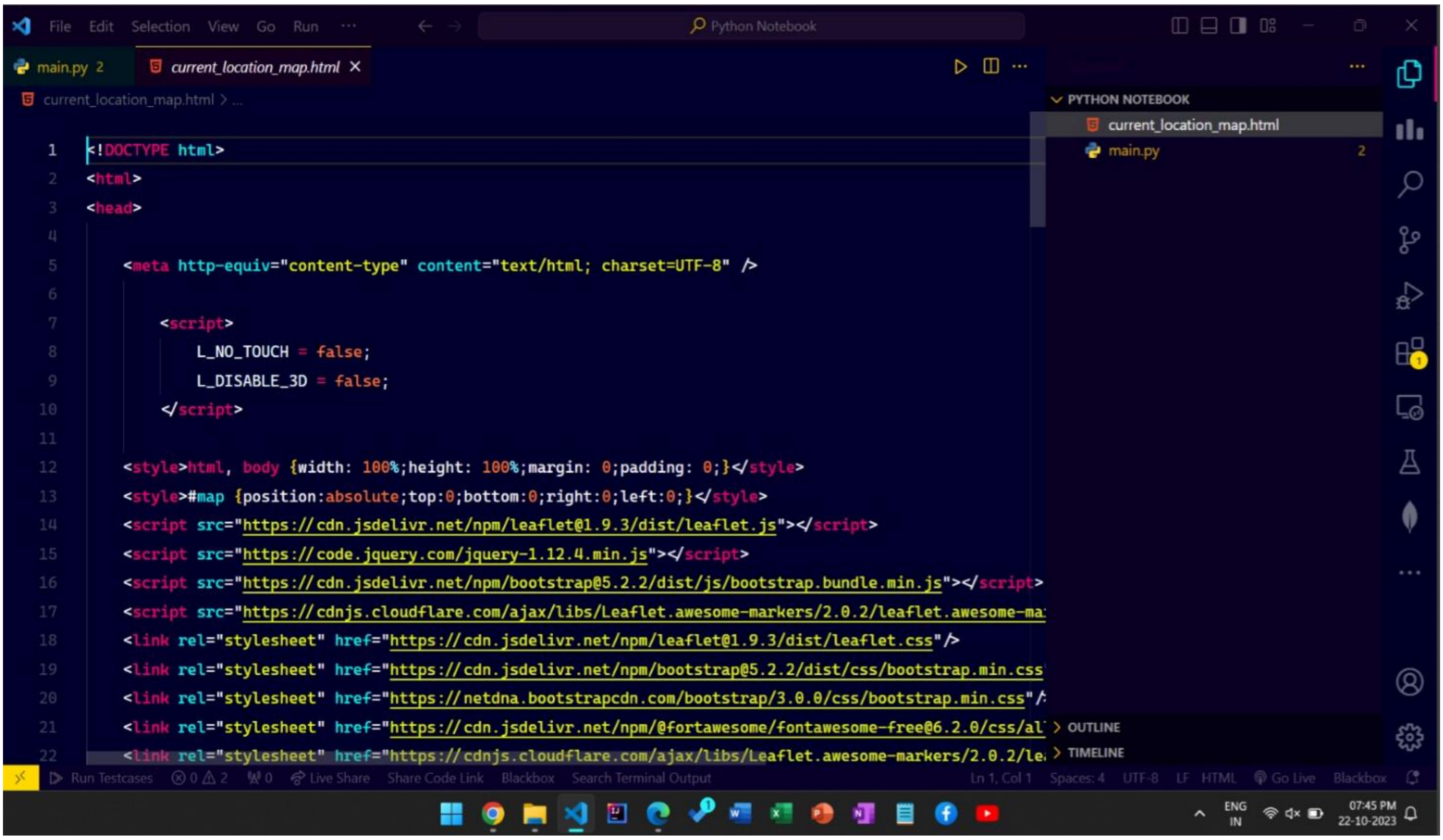
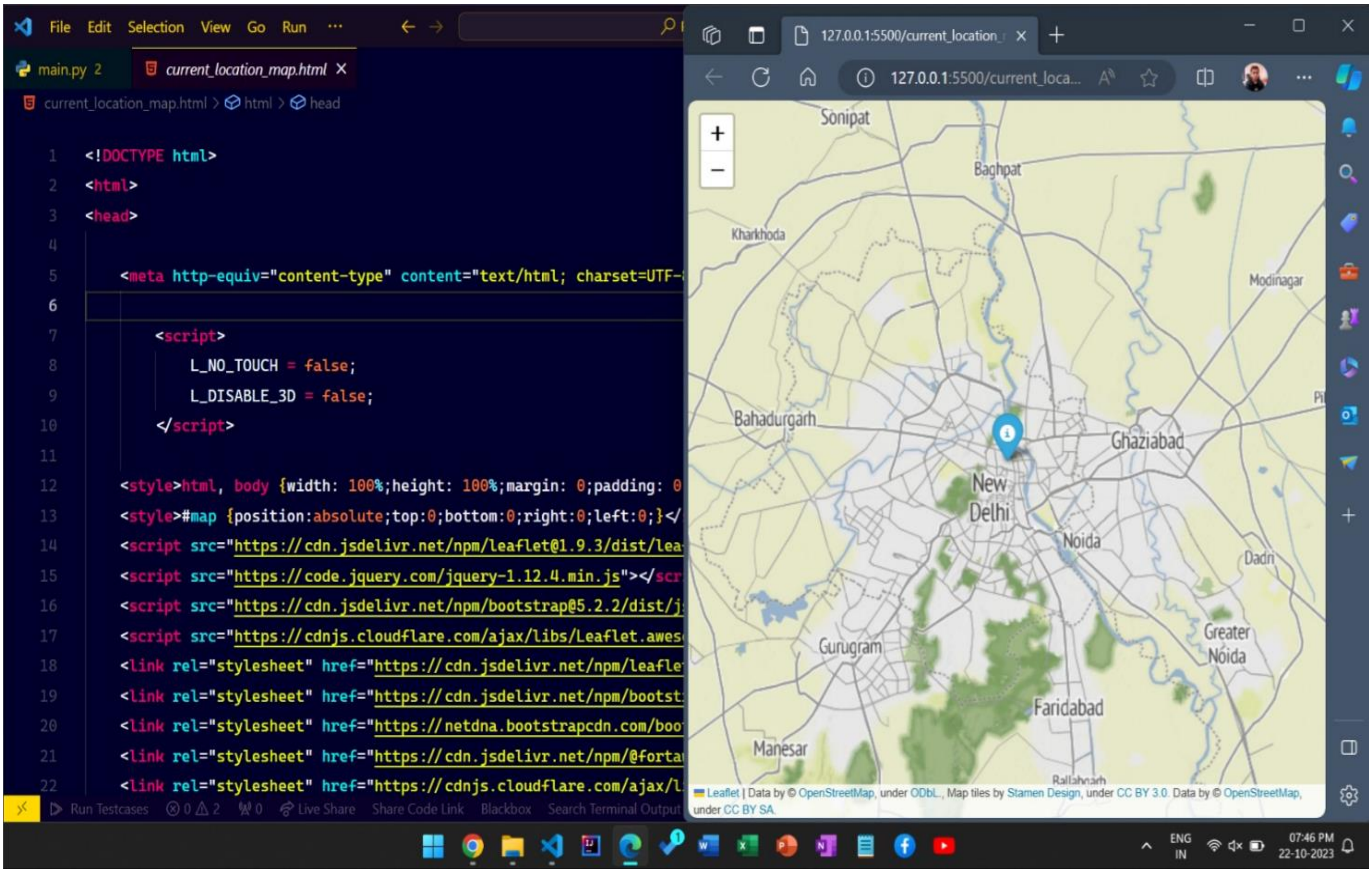



```html
<!DOCTYPE html>
<html>
<head>

    <meta http-equiv="content-type" content="text/html; charset=UTF-8" />

        <script>
            L_NO_TOUCH = false;
            L_DISABLE_3D = false;
        </script>

    <style>html, body {width: 100%;height: 100%;margin: 0;padding: 0;}</style>
    <style>#map {position:absolute;top:0;bottom:0;right:0;left:0;}</style>
    <script src="https://cdn.jsdelivr.net/npm/leaflet@1.9.3/dist/leaflet.js"></script>
    <script src="https://code.jquery.com/jquery-1.12.4.min.js"></script>
    <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/js/bootstrap.bundle.min.js"></script>
    <script src="https://cdnjs.cloudflare.com/ajax/libs/Leaflet.awesome-markers/2.0.2/leaflet.awesome-ma
    <link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/leaflet@1.9.3/dist/leaflet.css"/>
    <link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/css/bootstrap.min.css
    <link rel="stylesheet" href="https://netdna.bootstrapcdn.com/bootstrap/3.0.0/css/bootstrap.min.css"/
    <link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/@fortawesome/fontawesome-free@6.2.0/css/al
    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/Leaflet.awesome-markers/2.0.2/le
```



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    <script src="https://cdn.jsdelivr.net/npm/leaflet@1.9.3/dist/lea
    <script src="https://code.jquery.com/jquery-1.12.4.min.js"></scr
    <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/j
    <script src="https://cdnjs.cloudflare.com/ajax/libs/Leaflet.awes
    <link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/leafle
    <link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootst
    <link rel="stylesheet" href="https://netdna.bootstrapcdn.com/boo
    <link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/@forta
    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/l
```

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