

GPS TRACKING

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Project tittle	Smart Solutions for Railways

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import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from PIL import Image, ImageDraw

data_path = 'data.csv'
data = pd.read_csv(data_path, names=['LATITUDE', 'LONGITUDE'], sep=',')
gps_data = tuple(zip(data['LATITUDE'].values, data['LONGITUDE'].values))

image = Image.open('map.png', 'r') # Load map image.
img_points = []
for d in gps_data:
    x1, y1 = scale_to_img(d, (image.size[0], image.size[1])) # Convert GPS coordinates to image
    coordinates.
    img_points.append((x1, y1))
draw = ImageDraw.Draw(image)
draw.line(img_points, fill=(255, 0, 0), width=2) # Draw converted records to the map image.

image.save('resultMap.png')
x_ticks = map(lambda x: round(x, 4), np.linspace(lon1, lon2, num=7))
y_ticks = map(lambda x: round(x, 4), np.linspace(lat1, lat2, num=8))
y_ticks = sorted(y_ticks, reverse=True) # y ticks must be reversed due to conversion to image
coordinates.

fig, axis1 = plt.subplots(figsize=(10, 10))
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axis1.imshow(plt.imread('resultMap.png')) # Load the image to matplotlib plot.  
axis1.set_xlabel('Longitude')  
axis1.set_ylabel('Latitude')  
axis1.set_xticklabels(x_ticks)  
axis1.set_yticklabels(y_ticks)  
axis1.grid()  
plt.show()
```