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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))

Axis1.imshow(plt.imread('resultMap.png'))  # Load the image to matplotlib plot.

Axis1.set_xlabel('Longitude')

Axis1.set_ylabel('Latitude')
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Axis1.set_xticklabels(x_ticks)

Axis1.set_yticklabels(y_ticks)

Axis1.grid()

Plt.show()
```