

Sprint 3

TEAM ID	PNT2022TMID32983
PROJECT NAME	SMART SOLUTION FOR RAILWAYS
DATE	14/11/2022

```
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')
```

```
axis1.set_xticklabels(x_ticks)
```

```
axis1.set_yticklabels(y_ticks)
```

```
axis1.grid()
```

```
plt.show()
```