

User Guide

1. Data Description

This is a portion of GPS trajectory dataset collected in (Microsoft Research Asia) [GeoLife](#) project. A GPS trajectory of this dataset is represented by a sequence of time-stamped points, each of which contains the information of latitude, longitude, height, speed and heading direction, etc. These trajectories were recorded by different GPS loggers or GPS-phones, and have a variety of sampling rates. 95 percent of the trajectories are logged in a dense representation, e.g., every 2~5 seconds or every 5~10 meters per point, while a few of them do not have such a high density being constrained by the devices.

Note that each trajectory has a set of **transportation mode labels**, such as by driving, taking a bus, riding a bike and walking. There is a label file associated with each folder storing the trajectories of a user. Though this is only a part of the dataset used in the following papers, the scale of this released dataset can still support transportation mode learning.

2. Paper Citation

Please cite the following three papers when using this GPS dataset.

[1] Yu Zheng, Like Liu, Longhao Wang, Xing Xie. [Learning Transportation Modes from Raw GPS Data for Geographic Application on the Web](#), In Proceedings of International conference on World Wild Web (WWW 2008), Beijing, China. ACM Press: 247-256

[2] Yu Zheng, Quannan Li, Yukun Chen, Xing Xie. [Understanding Mobility Based on GPS Data](#). In Proceedings of ACM conference on Ubiquitous Computing (UbiComp 2008), Seoul, Korea. ACM Press: 312-321.

[3] Yu Zheng, Yukun Chen, Quannan Li, Xing Xie, Wei-Ying Ma. [Understanding transportation modes based on GPS data for Web applications](#). ACM Transaction on the Web. Volume 4, Issue 1, January, 2010. pp. 1-36.

3. Data Format

In this dataset, each folder stores one user's GPS log files, which have been converted .plt format. As most data was created in China, we use Beijing local time in the date-time property of each point. Regarding some trajectories generated outside China, e.g., USA, you need to re-convert the time of each point according to the corresponding time zones.

Plt format:

Field 1 : Latitude - decimal degrees.

Field 2 : Longitude - decimal degrees.

Field 3 : Code - 0 if normal, 1 if break in track line

Field 4 : Altitude in feet (-777 if not valid)

Field 5 : Date - see Date Format below, if blank a preset date will be used

Field 6 : Date as a string

Field 7 : Time as a string

Note that OziExplorer reads the Date/Time from field 5, the date and time in fields 6 & 7 are ignored.

An example:

-27.350436, 153.055540,1,-777,36169.6307194, 09-Jan-99, 3:08:14

-27.348610, 153.055867,0,-777,36169.6307194, 09-Jan-99, 3:08:14

Transportation labels:

Date	Start Time	End Time	Transportation Modes
2007/4/13	8:53:06	9:06:15	bike
2007/4/13	13:19:33	13:27:34	taxi
2007/4/13	15:01:26	15:18:02	taxi

First, you can regard the label of both *taxi* and *car* as *driving* although we set them with different labels for future usage. Second, a user could label the transportation mode of a *light rail* as *train* while others may use *subway* as the label. Actually, no trajectory can be recorded in an underground subway system since a GPS logger cannot receive any signal there. In Beijing, the light rails and subway systems are seamlessly connected, e.g., line 13 (a light rail) is connected with line 10 and line 2, which are subway systems. Sometimes, a line (like line 5) is comprised of partial subways and partial light rails. So, users may have a variety of understanding in their transportation modes. You can differentiate the real train trajectories (connecting two cities) from the light rail trajectory (generating in a city) according to their distances. Or, just treat them the same.

4. Contact

If you have any questions related to this dataset, please contact Dr. Yu Zheng, a researcher from Microsoft Research Asia

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