Part I

To run rewind on local machine:

You need to install Netbeans to run the entire project from

https://github.com/brownhci/Rewind/tree/master_Jiahui/ WebApplication1 or Jeff's laptop at /Users/jiahui/Desktop/ Rewind/NetBeans . The '.war' file in folder 'dist' is only used on web server. If you modify any file in this project and want to regenerate the '.war' file, right click the name of the project and select 'clean and build', the '.war' file will be regenerated in folder 'dist'. (I used Netbeans to debug, you can also switch to other Java IDE if you want.)

You also need to install MongoDB to create dbs for weather information and interesting location filtering. You can find the code to create dbs at https://github.com/brownhci/Rewind/tree/ master_Jiahui/create_db or /Users/jiahui/Desktop/Rewind/ create_db. You can find the files to create dbs at /Users/ jiahui/Desktop/dbFiles . You need to run command 'mongod' in terminal to start mongodb every time you run this project.

Part II

Detailed approach for Mode Prediction, Interesting Location Filtering, and Weather Information Searching:

Mode Prediction

Preliminary

3 basic modes of each small interval (formed by every two consecutive timestamps): still, walk, others

Each interval has a mode, all data makes up a track.

Segment

Step 0:

Merge all consecutive 'still' intervals. If the total time of merged intervals is larger

than a threshold (maybe 5 mins), this large interval has mode ‘still’. Use this large interval to separate the track, the track can be separated as:

[.....still.....] ----trip---- [.....still.....] ---- trip ---- [.....still.....].....

step 1:

For each trip:
Set these intervals’ mode the same as its next interval’s mode:
1. ‘still’ intervals

2. intervals with too small speed 3. intervals with too big speed

step 2:

For each trip:
Merge all consecutive ‘walk’ intervals. If the total time of certain merged interval is larger than a threshold (maybe 3 mins), the mode for this interval is ‘walk’.
Then each trip can be separated as:

[.....walk .....] ----segment---- [.....walk .....]---- segment ----[.....walk...].....

step 3:

Each segment now has a mode other than “still” and “walk”, the mode could be “run”, “car”, or “plane”.

Segment prediction

For each segment, predict it’s mode based on time duration, mean speed, expectation of speed, and acceleration.

Interesting Location Filtering

Only those locations in certain range of some interesting places are reserved. Because they are more likely for people to remember.

Filter points by different mode **(the range may vary)** still: select one point

walk: every 200 meters select a point, search locations in range of 100 meters

run: the same as walk

vehicle: every 1000 meters select a point, search locations in range of 500 meters

plane: every 3000 meters select a point, (picture from the satellite???)

Weather Information Searching

Only search for weather info of locations at least every 15 mins. This saves a lot of time. Since now the database only includes weather info from 01/01/2015 to 06/13/2015, searching of locations from timestamps out of this range will return null as result.