

| New Yorker group | Non-New Yorker group |
|--|---|
| Grand Central – Apple store Penn Station – Madison Square Garden Bryant Park – Grand Central | 9/11 Memorial preview site - September 11 Memorial at World Trade Center Staten Island Ferry - Statue of Liberty Empire State Building - Empire State Building 86th floor observatory |

Table 1: Top trips in New York City

Clearly, we can see that “hot path” recommendations based on data from these two groups are very different. New Yorkers’ hot paths are mostly around local hotspots such as an Apple store and public transportation locations such as the Grand Central, while the non-New Yorkers’ are around tourist attractions such as the Statue of Liberty. This simple example shows that treating users’ location data differently based on their different check-in behaviors is a promising direction to improve current location based recommendations.

3.2 Location Hub as Recommendation

Context

The concept of location hub provides an important cue of location context. A location hub is usually a place where many trips start and end, which implies frequent visits and significant staying time at that location. Such places may be home, office, or a regularly visited place such as a gym. Identifying the spatial location and the place type of the hub is important to understand the activities around the hub. On the one hand, the hubs are frequently visited places and there are usually many activities going on at places close to location hubs. Therefore, the hubs can be used as spatial activity center in mobility analysis. On the other hand, the type of the hub gives important context information for activities before or after the visit to the hub. For instance, the activities on the trips departed from home may be very different from the activities on the trips departed from office. Better description of location context leads to better understanding of what people are doing or what they are going to do, which is valuable information for many location-based recommendation systems. We can imagine a system recommending family eating places near home while recommending coffee shops and lunch places near to the office.

4. SUMMARY AND FUTURE WORK

In this paper, we introduced trajectory network analysis on user generated location data. The network-based method helps us catch important structural and sequential features of people’s mobility and gives us a unique perspective in the study of user type and location context, which are important factors in designing location-based recommendation systems.

As an early work in this field, there is still much work to be done. In the future, we plan to improve network construction method by developing more precise means of identifying trips rather than

using a simple threshold. We also plan to integrate the trajectory network analysis with two other methods we are developing: spatial patch analysis [9] and trade area analysis [8]. We also plan to further develop the “hot-paths” recommendation system and test it with real users.

5. REFERENCES

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