



MovementFinder: Visual Analytics of Origin-Destination Patterns from Geotagged Social Media

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Tasks in OD analysis

- T1 where people start and end their trips;
- T2 how long these trips are;
- T3 within a given region, what locations are popular origins and destinations;
- T4 whether OD flows within a region exhibit different patterns at different time of a day;
- T5 if more trip information is available, what the purposes of these trips are

MovementFinder

We presented a visual analytics system to support the analysis of origin and destination data. Our research emphasizes the use of geotags embedded in microblogs in the construction of origin and destination pairs, the development of interactive filtering tools to support in-depth analysis of movement patterns of people, and the combination of the contents of microblogs to deepen our understanding of the movement data as well as the semantics of movements

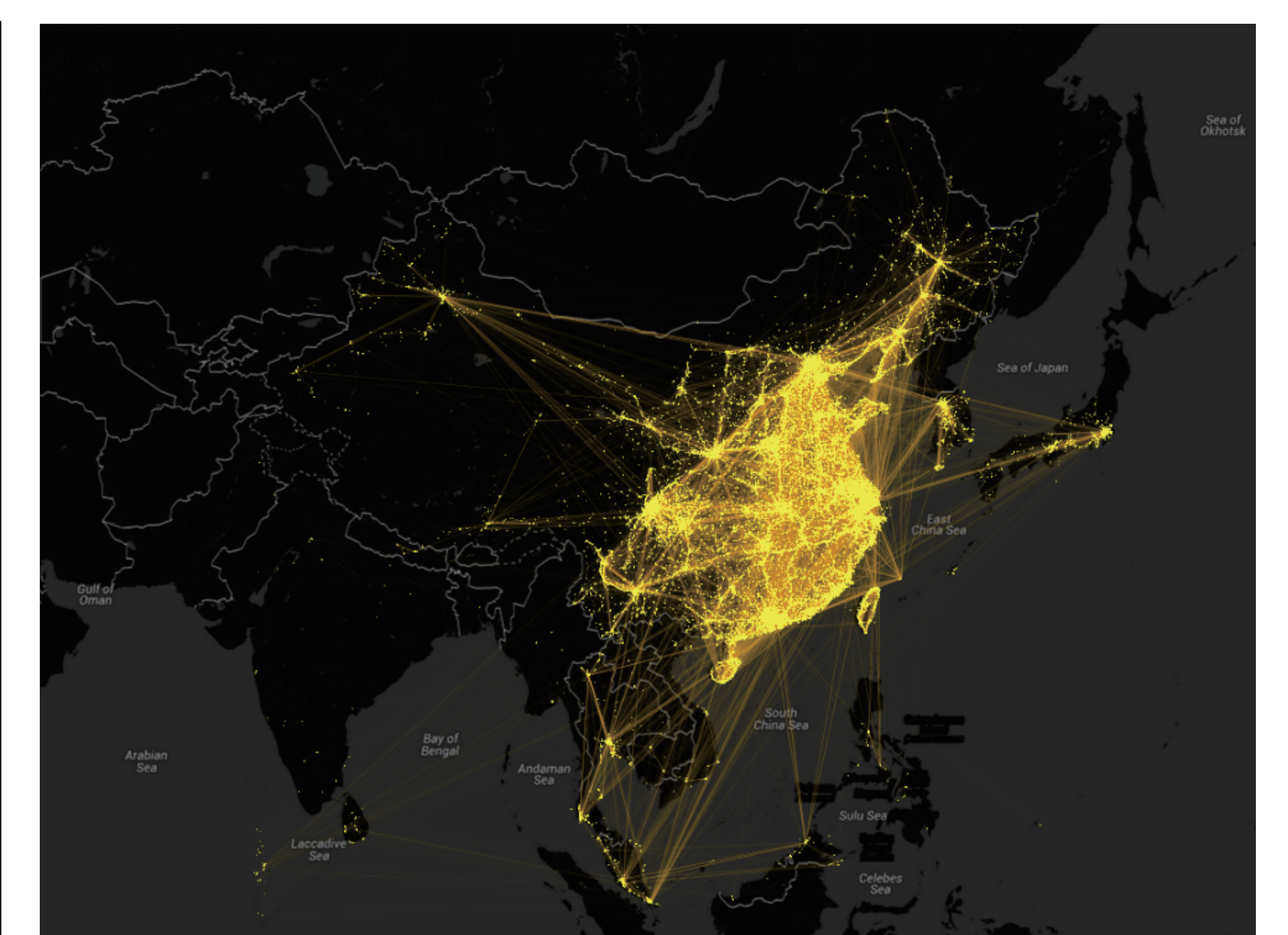
Data

The data we used in this research was extracted from Sina Weibo, the most popular microblogging service in China. Data cleaning, keyword extraction and spatial-temporal aggregation for indexing are finished in preprocessing. We extracted the OD pairs from the sequence of each user's trajectory based on geotagged weibos in a chronological order.

Interface



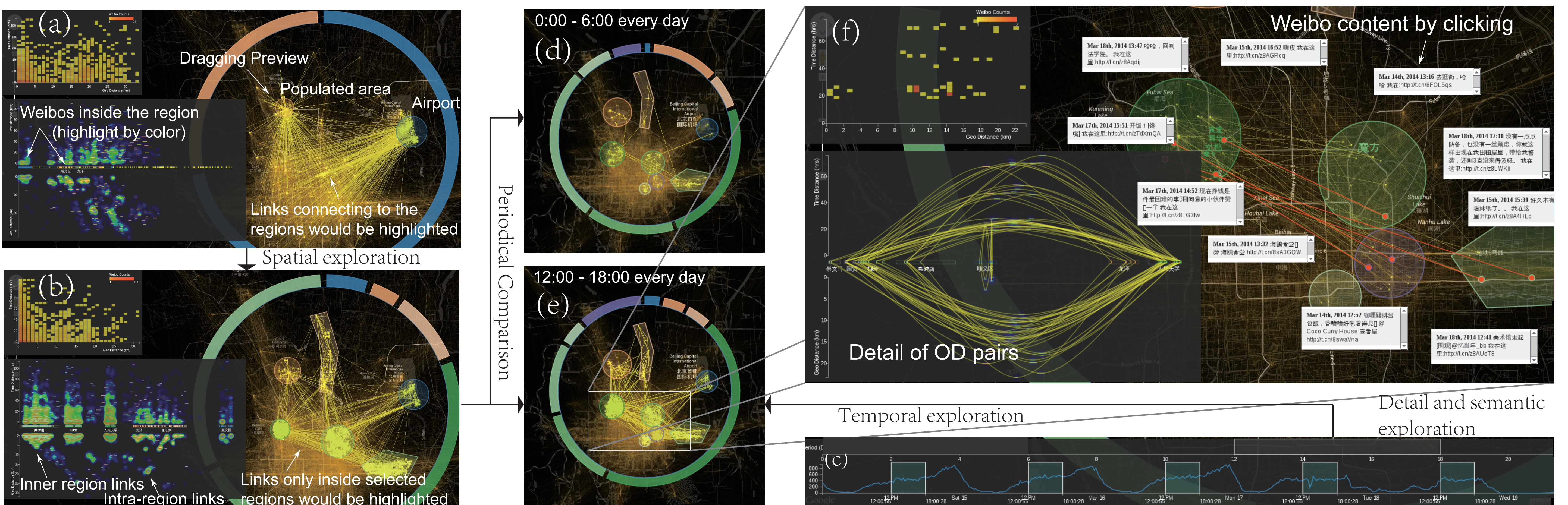
OD Map in China



The origins of the weibos dated between March 6th and March 13th, 2014 that we collected. In total, we obtained 421,600 weibos from 40,755 distinct accounts during this time period. As shown, weibo users in this period time are mainly from China, concentrating on the southeast regions. There are also active users from neighboring countries, such as Japan and Korea, and southeast countries (e.g. Singapore).

Case Study

In-depth Analysis of OD Data in Beijing



Analysis Step

- Step 1: Interactively select the region of interest (a)
- Step 2: OD visualization of clustering (b)

- Step 3: Periodic selection and comparison (c,d,e)

- Step 4: Detail drill down and semantic exploration (e,f)

- * By examining the location and the contents of weibos, we know that it is close to an airport (T1)
- * The ST matrix view shows high frequencies on the left side, so there are many relatively short OD pairs (T2)
- * One cluster in the center gets lots of traffic from other clusters (T3).
- * It shows the flow patterns in two different time periods: 0:00 to 6:00, and 12:00 to 18:00 (T4).
- * By clicking the OD pair on the map, we read the weibos of OD pairs of interest and know some people went to shopping while others usually went back to the university for dinner during that period (T5).

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