Tourists vs. Locals: Mapping Urban Traces from Social Media

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Nowadays, the traces of humans are left all over the social media. Massive volunteered geographic information (VGI) contributed by social media users offers great opportunities to create new methods of understanding human activities. The generation and analysis of the digital footprints on social media have the potential to uncover the underlying spatial-temporal patterns of how people interact with the outer environment differently.

This study provides an approach to differentiate the urban traces left by tourists from diverse origin countries and local citizens as different user groups based on the VGI obtained from a social media platform Flickr. Kernel density estimation was used to analyze the distribution of Flickr photos.

Objectives

1. To map the urban traces of tourists and local citizens from social media presented by their distinctive footprints

2. To model the city center according to the semantics extracted from VGI of tourists and local citizens

3. To create a tourist profile categorized by the origin countries of tourists as well as the local citizens in respect of the diverse thematic point of interests (POIs)
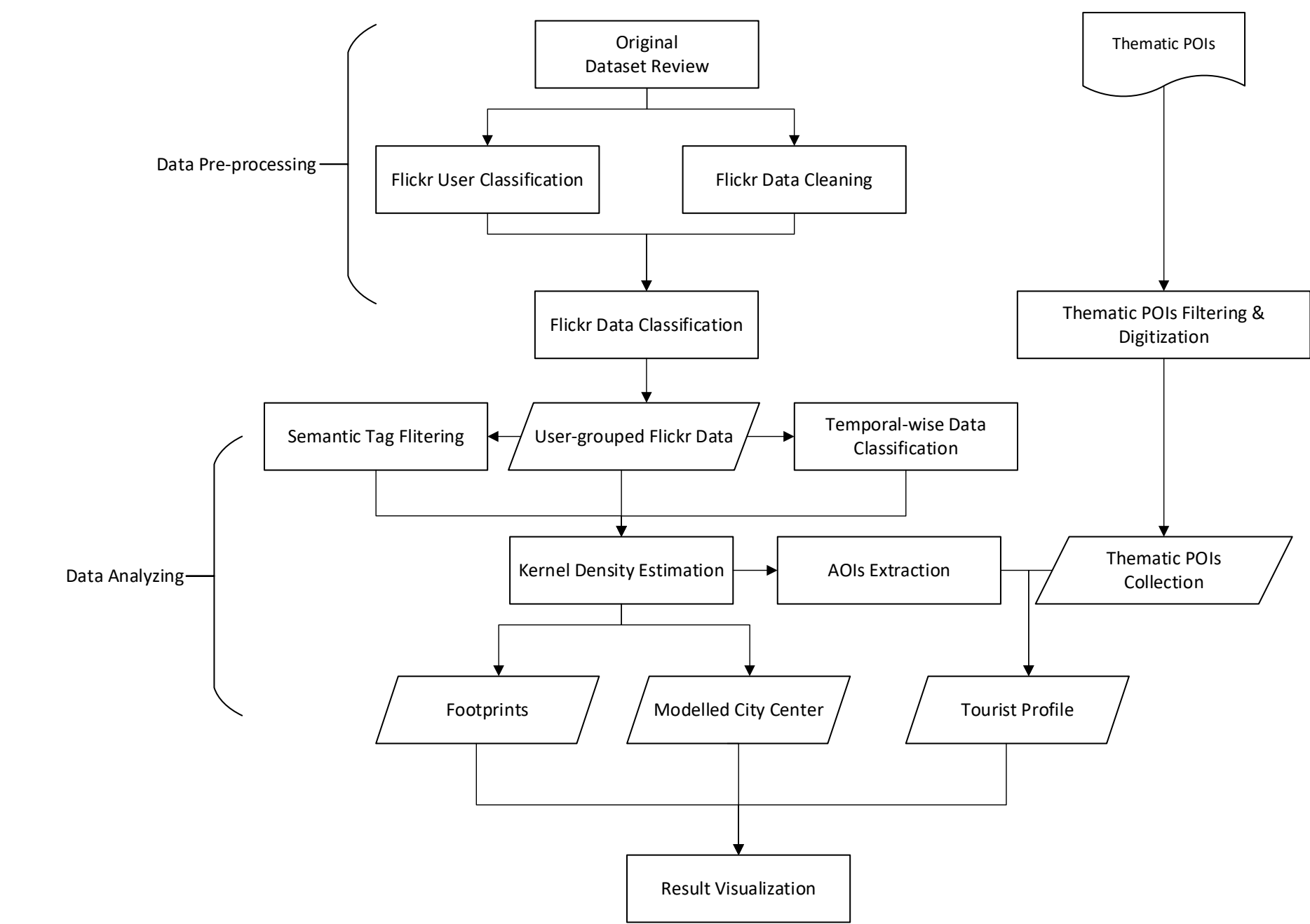
Methodology

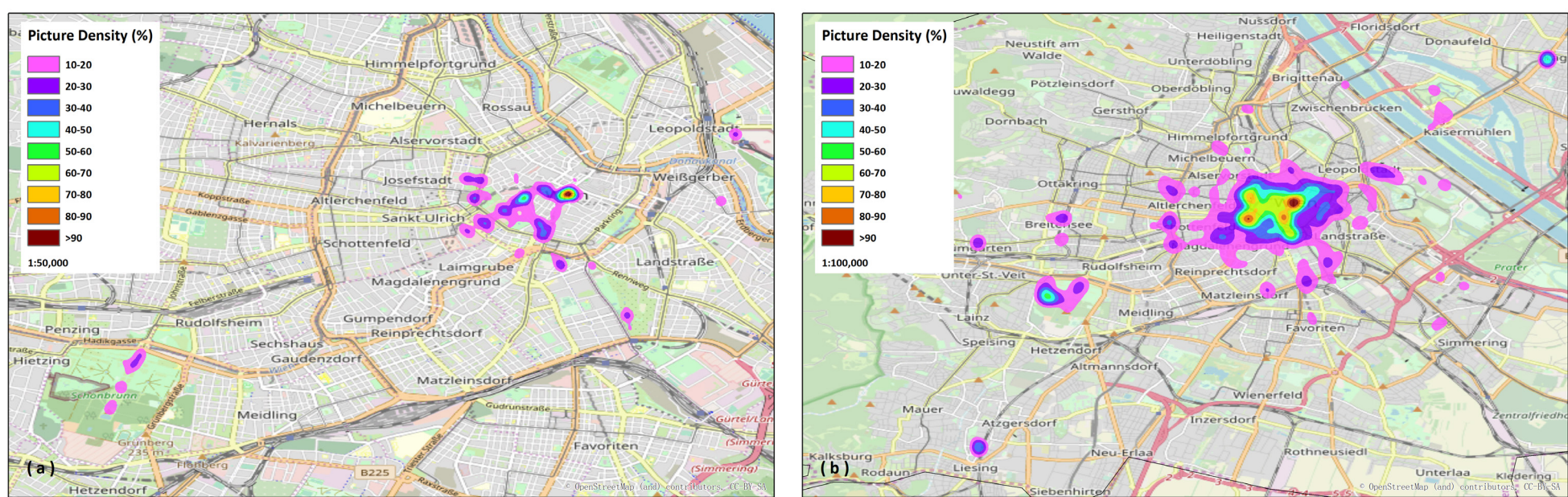Fig.1 Methodology - Study approach overview

Fig.2 Footprints - basemap by OpenStreetMap: (a) All Tourists, (b) Locals

Study Area

Vienna, the federal capital of Austria. It is considered as one of the top desitination for tourists and the top of the world's most livable cities. Vienna has attracted over 7.5 million domestic and foreign tourists in 2018.

Conclusions

1. Distinctive footprints are generated for each user group. Despite the similarity in patterns, there are certainly differences among these footprints. Cite the footprints of all tourists and locals (see Fig.2) for example, it appears that pictures are always concentrated in the southwest part of Innere Stadt, Schönbrunn, Belvedere, and the northwest corner of Prater. Especially, the area around Stephansdom is overlapped with the area where more than 90% pictures are located in all footprints; areas around Imperial Palace and Heldenplatz (Heros' Square) are always overlapped with the area of more than 40% picture density in all footprints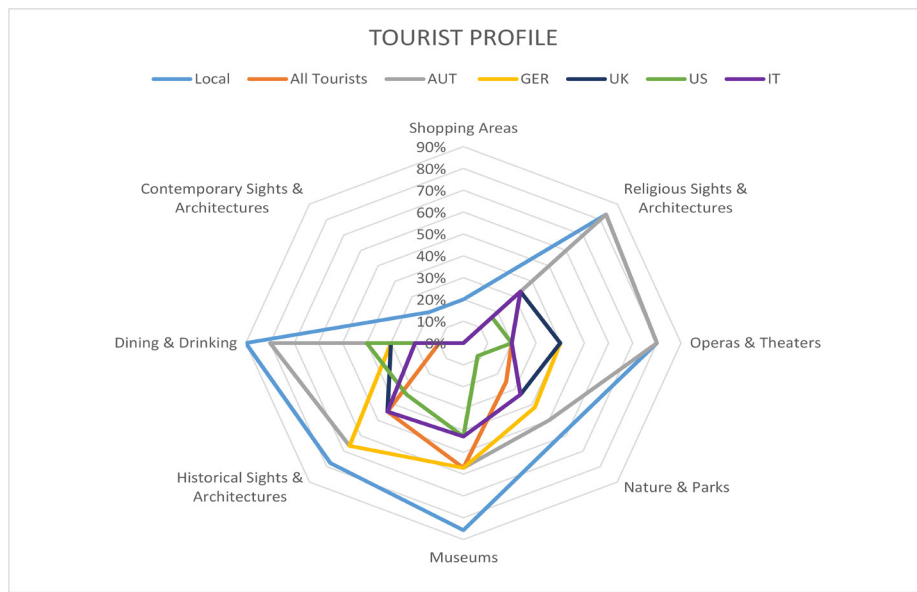 as well (including locals' footprints). However, the footprint of the local user group is more dispersed and covers a larger area with more hotspots (areas with relatively higher picture density).

2. As the modeled city center depicts (see Fig. 3), tourists and local citizens do have a rough agreement on the location of the fuzzy concept – city center. They both consider that area around Stephansdom is the city center and all the candidate locations are located in the district Innere Stadt. But locals obviously have a clearer idea of the range of the city center. Conversely, tourists seem to be more ambiguous about it. All three nuclei locations share almost the same density of city center-related pictures. The perceived city centers are related with the footprints of each group and the relation is clearer among the tourists group.

3. The goal of generating a tourist profile has been achieved by comparing thematic POIs with extracted AOIs for each user group. Each group shares its own emphasis of interest on different thematic categories (see Fig.4).
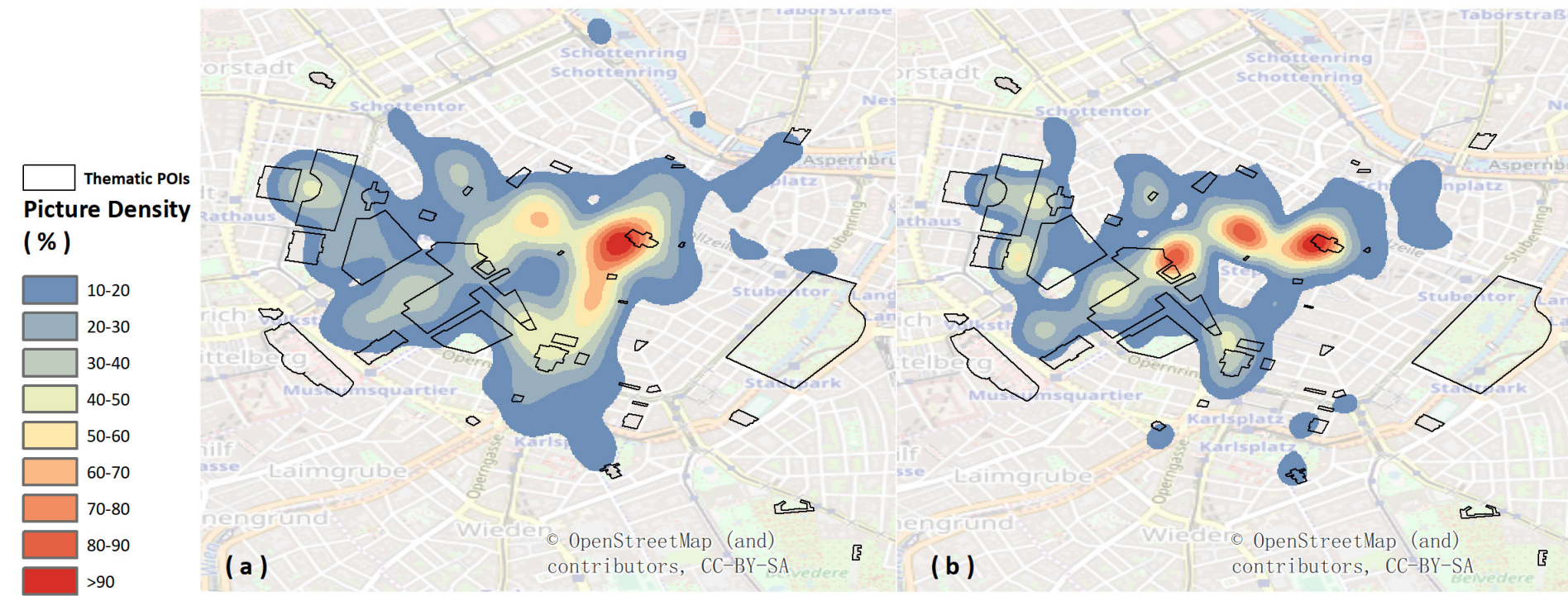

Fig.4 Tourist Profile - Windrose

References

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[2] Sun, Y., Fan, H., Helbich, M., & Zipf, A. (2013). Analyzing Human Activities Through Volunteered Geographic Information: Using Flickr to Analyze Spatial and Temporal Pattern of Tourist Accommodation. In J. M. Krisp (Ed.), Progress in Location-Based Services (pp. 57-69). Berlin, Heidelberg: Springer Berlin Heidelberg.

Fig.3 Modeled city center - basemap by OpenStreetMap: (a) All Tourists, (b) Locals

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