

Automatic User Profiling for Intelligent Tourist Trip Personalisation

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1 Background Research and Literature Review

This section aims to position our study and ease the understanding of its conclusions and implications. Therefore, the upcoming sections describe both of the technologies that we will use in this dissertation. In the first part, we give an overview of the TTDP research area, and in the second part, we aim at clarifying existing research regarding automatic user profiling.

1.1 Recommender Systems

We introduce the term Recommender Systems (RS) as a solution for the TTDP and present background knowledge and relevant work that forms this thesis’s basis. Recommender systems offer tourists information in a unified and centralised way, providing them with a plan for their trip [1–3]. Two domains develop current RS, which are methods for obtaining tourist products (such as events and Point of Interests (POI)) and tour recommendation algorithms that create the itineraries [3]. The following sections discuss related work in each field, respectively.

1.1.1 Methods of retrieving travel products

Before producing an itinerary, RSs have to formulate a dataset of POIs from a data source. The proposed tour recommendation algorithm will then evaluate a timetable from this dataset after understanding the users’ implicit preferences. Throughout all the studies, there have been several ways to identify an appropriate data source representing real-life tourist trajectories.

One approach is made by gathering tourist products by mining them from geotagged images such as Flickr, Facebook or Twitter [4–13]. Lim et al. [3] denote this process into three steps;

1. First, the application assembles an organised series of relevant photographs of the user’s destination.
2. The application then maps these pictures with a list of popular places extracted from sites like Wikipedia.
3. Since the photos contain each location’s timestamps; the application can calculate an approximate visit duration for each specific POI.

A quick and accurate approach towards gathering essential places in the vicinity is using Mapping & Location APIs such as Foursquare’s, Google’s or TripAdvisor’s. Wörndl et al. [14] use this approach and build a dataset of prominent POIs by querying the API with the user’s desired location. In return, they receive a sequence of places and information about each site, including its category, other user’s ratings, opening hours and helpful additional information that they can use as criteria for the itineraries.

The ubiquitous presence of smartphones and GPS-enabled devices has facilitated another approach to collecting trajectories in a modern person’s life. [15, 16] A system can automatically gather the best POIs to visit based on other users’ historical paths providing more information than previous methods such as the average time people spend at a specific POI and how many people go there. However, privacy issues are the main caveat towards this approach since it requires people to share their location constantly and publically [3].

The most straightforward approach is by self-defining the POIs or gathering them from a dataset such as the TSPLIB95 ¹. Building a dataset from manually gathering POIs allows for precision and a complete understanding of the itinerary that the algorithm will generate. However, the algorithm would be location-specific testified, and the database would be personalised towards the author’s preferences [17–19].

1.1.2 Tour recommendation systems for both individual and grouped travellers

hhello

1.2 User Profiling for Travel Preferences

hello

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¹Sample instances for travelling salesman Problem: <http://comopt.ifi.uni-heidelberg.de/software/TSPLIB95/>

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