

6. Scavenger Hunt game helps in customer recommendations

There are many web portals aiming to recommend businesses like shops, restaurants and cafes. They are interested to know how many people visit them. We help them by developing algorithms for determining actual visits based on GPS-traces from mobile phones and public data from the web only.

For proper scientific validation of the developed techniques, a large data set with GPS-traces is needed that is truthfully labelled with actual visits to points-of-interest. In our demo we show a means to obtain such data, namely a mobile Scavenger Hunt game ('Speurtocht'). The game has been used for the Kick-In events of the University of Twente in August 2013 and 2014.



ICT science question

What is the best way to compute a visit to a point-of-interest based on GPS-traces from mobile phones?

Such actual visits can be computed from geographic data as an intersection of the GPS-trajectory with a polygon describing the circumference of the point-of-interest. Polygon-data are, however, not available. We have developed algorithms for estimating circumference polygons of point-of-interest-objects by analyzing more coarse-grained map data and data on other objects.

Our algorithms produce quite accurate results even when data of substandard quality is used. The latter is important, because it allows the application to use only publicly available data.

Application

For the commercial recommendation of items, one needs indicators of suitability per target group



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COMMIT/ project
TimeTrails Spatiotemporal Data Warehouses for Trajectory Exploitation

and other categorizations as expressed by points-of-interest (a shop, a restaurant, or a cafe). Our partner EuroCottage would like to recommend holiday homes taking into account neighbouring points-of-interest and indicators such as popularity. We automatically construct holiday home profiles with data on neighbouring points-of-interest. Factual data are harvested from the web. Popularity is derived from analyzing GPS-traces from mobile phones of previous vacationers.

Alternative Application

Determining actual visits to places can provide important information in many different domains. Cars, planes and animals all produce trajectories. For example, automatically determining the feeding and nesting places of animals from sightings or GPS-tags helps to understand animal behaviour.

Nice to know

Two applications have been created on this platform already: Kick-In Quest (2013) and Kick-In Scavenger Hunt (2014). They are available for download in the Play Market and the App Store.



Going beyond social media 'likes' while your phone keeps track which shops, restaurants and cafes you visit for the purpose of recommending holiday destinations.



In geographic information systems analysis, from your phone data it is determined which shops, restaurants and cafes you visit.



The system demonstrates the possibilities of intelligent social media supported maps.



Given trajectories and estimated polygons for points of interest, accurately determine true visits; and how to obtain truthfully labelled GPS-data for validation using a mobile game.