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# SUGGESTING LOCAL ACTIVITIES BY INFERRED CONTEXT

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## ABSTRACT

A system for suggesting local activities based on inferred user and location attributes (e.g. familiarity with an area, time of day, day of week), as well as explicitly stated attributes (e.g. group size + composition, such as alone, couple, with friends, with kids) is presented. The system is based on an ontology of activities including high-level intents, moods etc. afforded by a particular locality. These activities are then mapped to contextual factors by expert editors who assign a value to each activity and contextual factor intersection, indicating the degree to which an activity is suited for a particular context. The system then suggests activities based on the inferred and explicit user-stated contextual factors using the mapping. Advantages of the system include generation of expert suggestions or recommendations that are similar to what people provide one another, which encourages discovery by highlighting locally typical activities.

## BACKGROUND

Finding a local business, for example a cafe, restaurant or bar to pass time or to fulfill a specific need can be difficult. Most people ask friends or locals for advice or go to the businesses to inspect them. Reviews in local media or social media could also be consulted. However, all these existing approaches have a number of shortcomings. They are often time-consuming and have a presumed intent that may be overly specific, (for example looking for Italian cuisine), whereas the user's intent might be more open-ended and more related to a particular mood or experience rather than a specific business category. For example the user may intend to try out something new or celebrate in style or have a memorable evening or discover a local specialty.

Users typically do not search for local businesses using these terms because they do not expect local search tools to understand these open-ended concepts as most of the tools are structured around business categories such as cuisine or business type, for example, bar, restaurant or grill.

## DESCRIPTION

This disclosure presents a system for suggesting local activities based on inferred user and location attributes (e.g. familiarity with an area, time of day, day of week), as well as explicitly stated attributes (e.g. group size + composition, such as alone, couple, with friends, with kids). The system is based on an ontology of activities including high-level intents, moods etc. afforded by a particular locality. These activities are then mapped to contextual factors including time of day, day of week, good for locals, good for visitors, good for a loner, a couple, a group or a group with kids. This mapping is done by expert editors who assign a value to each activity and contextual factor intersection, indicating the degree to which an activity is suited for a particular contextual factor. The system then suggests activities based on the inferred and explicit user-stated contextual factors using the mapping. The activity set could be expanded to capture activities afforded by other neighborhoods, cities and countries. Additionally or alternatively, the system could also comprise an editorial guidebook for each neighborhood written by experts. Typical user preference of time is illustrated in FIG. 1 and type of group or context is illustrated in FIG. 2.
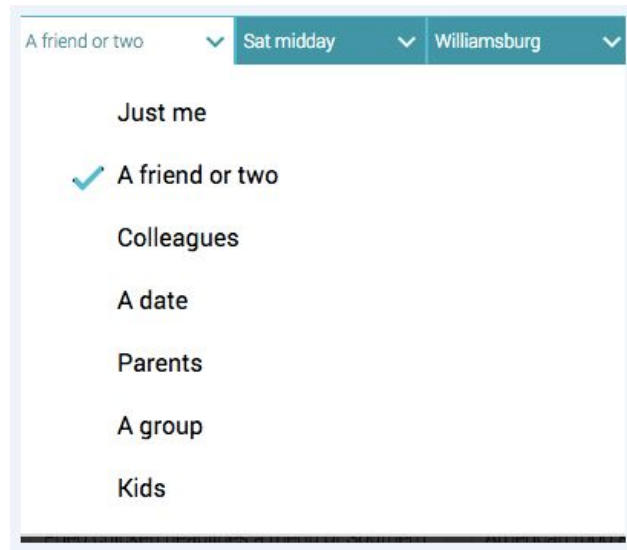
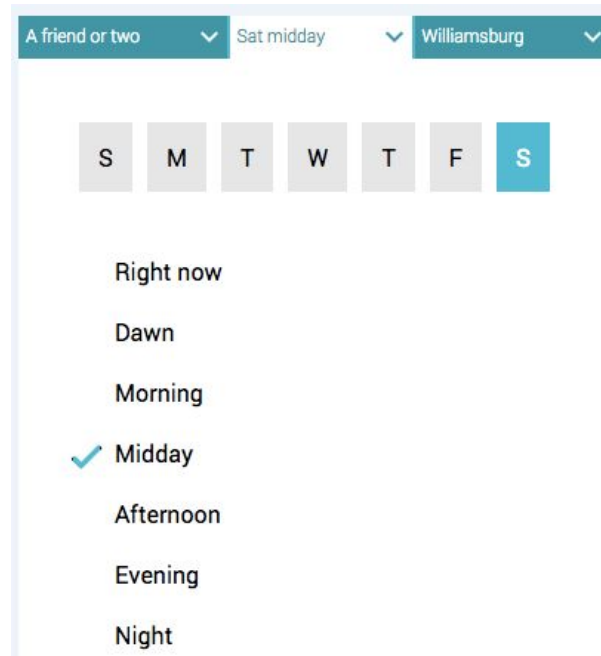FIG. 1: Typical user input for group size and type

FIG. 2: User selection of time context for activity

The attributes map to colloquial human language about experiences and one attribute

sets a number of filters on business criteria. For example, if a user selects 'celebrating' then

the system pre-selects 'good for group' criteria automatically. This approach saves users from

individually selecting from large sets of place attributes which is a laborious task associated

with most of the current systems and other filter user interface implementations. Matching

places (local businesses) to activities can be done in a number of ways such as mining of human free-text reviews, mining of location history, mining of query streams, editorial coding, etc.

Additionally, place-coverage is another criterion that could be included in the mapping, for example, the number of places in the vicinity affording a given activity. Taking into account place coverage allows the system to rank locally typical activities (i.e. those that are supported by many places) higher, and thus gives the user ideas for things to do in a particular neighborhood that they might be unaware of.

The system then provides suggestions based on an algorithm that ranks activities based on time-of-day, day-of-the-week, user-stated social context such as "alone", "with friend", "couple" or "larger group", system-inferred user status (e.g. local vs. visitor) and coverage of attributes by businesses in the local environment. While all the available systems typically rank places based on user-set filters, the current system allows for inclusion of attributes that depend on user/place relationship, for example places that a user has visited before, places a user has rated high or places that a user hasn't tried yet etc.

In an example, an ontology of >250 activities (capturing high-level intents, moods, etc.) that capture activities afforded by Williamsburg, NYC was created. These activities are mapped by expert editors to contextual factors (currently: time of day, day of week, good for locals, good for visitors, good for (alone, couple, with kids, groups, etc.). Typical food and drink suggestions for "A friend or two" on a Friday evening suggested by the application are shown in FIG. 3.
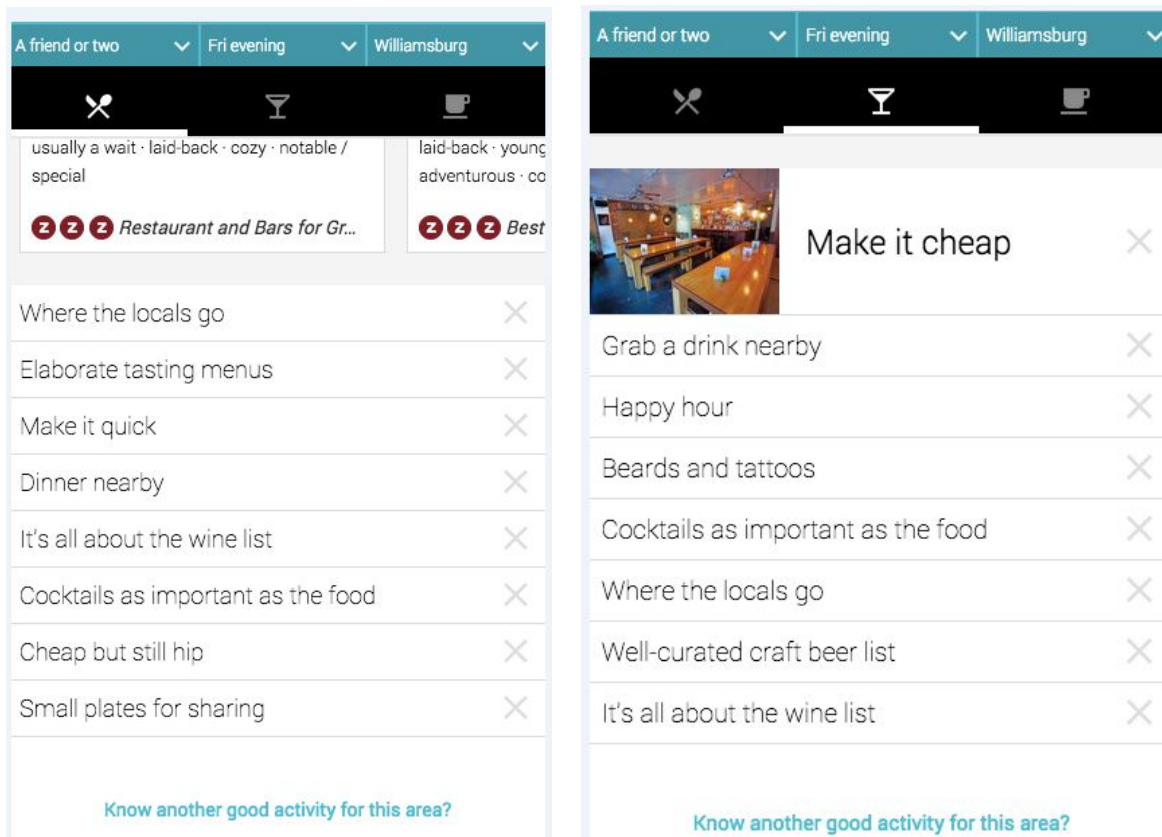
FIG. 3: Friday evening food and drink suggestions for "A friend or two"

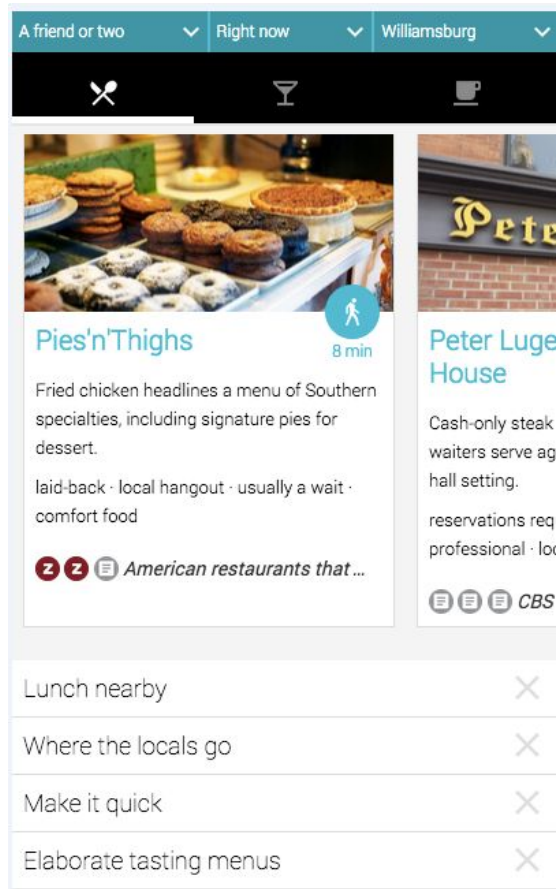Example quick lunch suggestions for "A friend or two" are indicated in FIG. 4.

FIG. 4: Possible lunch suggestions for "A friend or two"

Advantages of the system and algorithm disclosed include generation of recommendations that are similar to what people provide one another, which encourages discovery by highlighting locally typical activities. Other advantages of the system are that the suggestions do not require the user to express an interest via a business category which in many instances may not reflect their true preferences or may come from a domain in which they lack knowledge. Thus the system provides the concept of proximity-based coverage ranking.