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Restaurant Recommendations based on Dynamically Updated Live Seating Availability

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ABSTRACT

People often go to restaurants without a prior reservation or an advance phone call to check if there is a table available for their party. If the restaurant happens to be full and cannot accommodate the group, people typically search for nearby restaurants and select another restaurant to try. This disclosure describes enhancements to map applications that integrate dynamically updated information on seating availability at restaurants. With permission from the users, the seating availability information is used to provide dynamically updated seating availability information for restaurants and recommendations for other suitable options.

KEYWORDS

- Maps
- Restaurants
- Seating availability
- Dining recommendations
- Shared dining
- Venue information

BACKGROUND

People often go to restaurants without a prior reservation or an advance phone call to check if there is a table available for their party. If the restaurant happens to be full and cannot accommodate the group, people typically search for nearby restaurants and select another restaurant to try. The process repeats until a restaurant that is acceptable to the party and has available space is found. This can entail users traveling from one restaurant to another by a

vehicle or on foot. In this process, people often use map applications on their devices to search for preferable restaurants and to obtain directions to the respective locations.

DESCRIPTION

This disclosure describes enhancements to map applications that integrate dynamically updated information on seating availability at restaurants. With permission from the user of the map application, seating availability information at various restaurants in the vicinity is obtained and is used to provide dynamic updates on a map as well as via notifications delivered at appropriate times.

For instance, if a user invokes a map application to seek directions to an initially chosen restaurant, the map application displays the current or historical occupancy of the restaurant at the chosen time, e.g., prior to beginning navigation. If the user permits, additional alerts are provided to the user via a notification sent to the user's device, e.g., in case the restaurant becomes full while the user is on the way, if the restaurant closes for another reason, etc. Alternatively, or in addition, indications can be provided if the chosen restaurant is likely to be full at the time when the user is expected to reach, determined with user permission based on the user location and navigation guidance provided. Such predictions can be based on past occupancy information for the restaurant. Further, restaurants can also be provided an interface to upload their seating availability information to the map application.

In addition to displaying, updating, and predicting seating availability information for restaurants, restaurant recommendations can also be provided. For example, such recommendations can be provided proactively or upon explicit request by the user. For instance, upon reaching the initially chosen restaurant, a user may discover that it is full (or unsuitable for some other reason) and seek alternate restaurants in the vicinity. In such a case, recommended

restaurants (e.g., restaurants that serve similar cuisine, restaurants that have similar ratings and reviews) within the user's desired area are highlighted within the map application along with corresponding live seating availability. Alternatively, or in addition, restaurant recommendations can be delivered at opportune moments. For instance, while on the way to a restaurant that is likely to be full by the time the user reaches, users can be notified, e.g., when they are near a similar restaurant with greater seating availability.

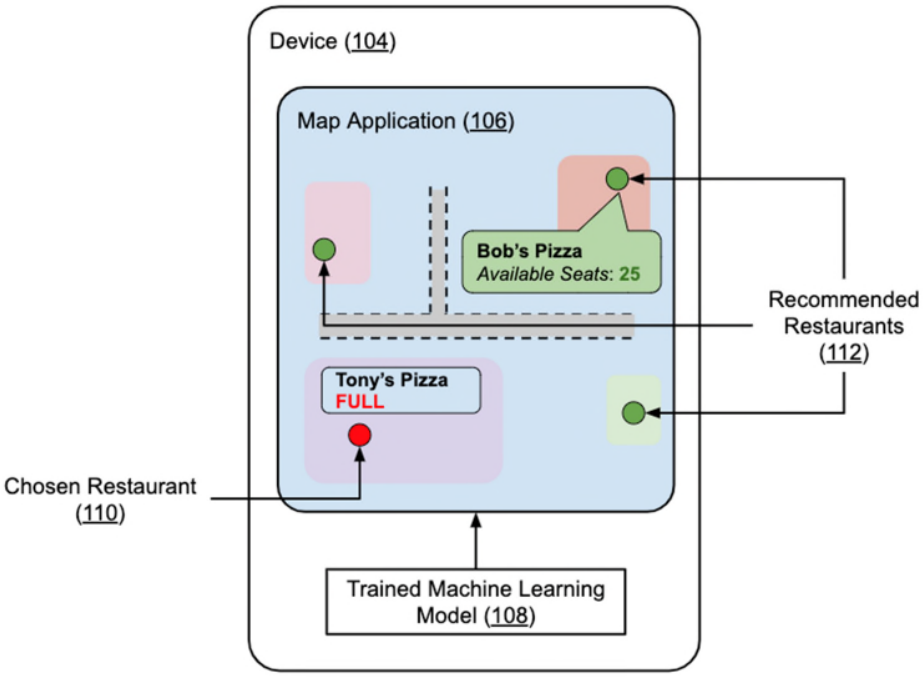

Fig. 1: Recommending alternate restaurants based on available seating

Fig. 1 shows an operational implementation of the techniques described in this disclosure. A user uses a map application (106) on a device (104) to look up and navigate to a chosen restaurant (110). While the user is on the way to the restaurant, it reaches its full seating capacity. At that time, the user is shown recommendations for nearby alternate restaurants (114) that have available seating.

For example, the recommendations are generated by a trained machine learning model (108) that takes into account various relevant user-permitted factors such as the initial restaurant choice, user's past restaurant choices, current seating availability, etc. For instance, Fig. 1 shows that one of the alternate recommendations is a pizza place ("Bob's Pizza") which is a similar type of restaurant to the one the user chose ("Tony's Pizza") initially.

The restaurant recommendations can be generated by any suitable trained machine learning model. If the user permits, the model uses the user's initial restaurant choice along with the user's preferences and past restaurant choices as inputs to the model. A personalized score for each restaurant that indicates the likelihood of the user preferring that restaurant is obtained as output of the model. Restaurants within the user's targeted area that have scores above a specific threshold are surfaced on the map as recommendations.

The user can select which factors are provided as input or deny permission for user-specific parameters. In such a case, the user can be provided recommendations based on known information regarding restaurants similar to the one the user chose initially, without use of any other user-specific information. Recommended restaurants can be surfaced via any suitable user interface (UI) mechanism, such as highlighting portions of the map, as a list of options, separately marked advertisements, etc.

If users permit, the described techniques can also include functionality that allows a user to share the recommended restaurant options with other users. Such a functionality can allow a group of users who wish to dine together the ability to reach a collective decision on the next acceptable option and navigate there via each individual's map application. To that end, the recommendation sharing functionality can include mechanisms to make group decisions, such as voting.

The threshold values for restaurant scores to determine recommended options can be set by the developers and/or specified by the users and/or determined dynamically. Notifications that alert the user of the recommendations can be delivered in one or more ways, such as text, audio, visual indicators, vibrations, etc.

The techniques described above can be integrated within any application that includes map-based components. The operations can be presented as additional or alternative navigation options pertaining to restaurant locations. Implementation of the techniques described in this disclosure can enhance the individual and collective user experience (UX) of finding available dining options of choice at short notice.

Also, while the foregoing description refers to restaurants, the described techniques can be utilized to recommend other types of businesses, e.g., bars or coffee shops; venues such as music or comedy clubs; group activities such as group workouts, hikes, or other events; theaters; and other venues.

Further to the descriptions above, a user may be provided with controls allowing the user to make an election as to both if and when systems, programs or features described herein may enable collection of user information (e.g., information about a user's social network, social actions or activities, profession, a user's preferences, or a user's current location), and if the user is sent content or communications from a server. In addition, certain data may be treated in one or more ways before it is stored or used, so that personally identifiable information is removed. For example, a user's identity may be treated so that no personally identifiable information can be determined for the user, or a user's geographic location may be generalized where location information is obtained (such as to a city, ZIP code, or state level), so that a particular location of

a user cannot be determined. Thus, the user may have control over what information is collected about the user, how that information is used, and what information is provided to the user.

CONCLUSION

This disclosure describes enhancements to map applications to integrate dynamically updated information on seating availability at restaurants. With permission from the users, the seating availability information is used to provide dynamically updated seating availability and recommendations for other suitable options. Functionality that allows a user to share recommended restaurant options with other users can also be included. The techniques described above can be integrated within any application that includes map-based components. Implementation of the techniques described in this disclosure can enhance the individual and collective user experience (UX) of finding suitable available dining options at short notice.