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Location-based searches performed on behalf of users by trusted others

ABSTRACT

Search engines account for user location into account by tailoring search results based on a user's current location, if permitted by the user. However, there may be situations in which a user's information need is tied to the location of another user. In such situations, the user must first ask for the other party's location and formulate queries that explicitly include the provided location. This disclosure describes techniques that enable a seamless user experience when searching for information or resources connected to the location of another party, such as a relative, friend, co-worker, etc., with permission from the parties involved. The trusted party can search for information and resources by forming queries that explicitly indicate the granting individual's location.

KEYWORDS

- Location-based search
- Location access
- Voice assistant
- Location-based queries
- Nearby resources
- Remote assistance

BACKGROUND

Location is often an important aspect connected to people's searches for information and resources since many information needs and tasks are dependent on location. For example, a search for a gas station often implies that the user is looking for a gas station near the user's current location. Alternatively, the connection of the search to the user's current location can be

specified explicitly within a query such as “gas stations near me.” Search engines take location into account by tailoring the search results based on the user’s current location. In such cases, the user’s location is typically inferred based on one or more user-permitted factors, such as IP address, GPS location, etc.

However, there may be situations in which a user’s information need is tied to the location of another user. For example, someone who is planning to meet with a friend for dinner may need to look for restaurants near the friend’s location. Similarly, someone providing remote assistance to a relative may need to seek information near the relative’s location. In such situations, the user must first ask for the other party’s location and formulate queries that explicitly include the provided location. Moreover, if the other party changes location, the user must periodically check with the other party for updated location information.

DESCRIPTION

This disclosure describes techniques that enable a seamless user experience when searching for information or resources connected to the location of another party, such as a relative, friend, co-worker, etc., with permission from the parties involved.

An individual can specify other trusted parties that are permitted to access the individual’s location. The individual can further constrain the location access to each trusted party based on factors such as time of day, duration, category of information resources for which search is performed, etc. Optionally, a reason for the access can also be included. The trusted parties can be specified by one or more identifiers such as name, email, phone number, and/or relationship, such as “Dad,” “Mom,” “Wife,” “Friend,” etc. For instance, a person can specify that he would like to allow location access to his son for the next twenty four hours for information related to healthcare needs.

The trusted party that is granted location access receives a corresponding notification along with the terms and conditions for the use of the location of the other party. The notification can be sent via email, as a notification to a mobile phone, or any other suitable mechanism. Once the trusted party agrees to comply with the specified terms and conditions and accepts the granted access, the location of the individual who has granted access can be used by trusted party as a parameter for information searches for the specified purposes during the specified duration.

Once location access has been established as described above, the trusted party can search for information and resources based on the location of the individual that granted access by forming queries that explicitly indicate the desire to connect the queries to the granting individual's location. However, the precise current location of the granting individual is not disclosed to the trusted party. In case the granting individual is moving, the search results are obtained at a higher granularity, e.g., entire city. Queries pertaining to categories other than those for which the access has been granted are not permitted access to the granting individual's location. For instance, if a user Alice allows another user Bob access to her location for 24 hours for the purposes of shopping, Bob can perform queries such as "clothing stores near Alice" during that 24-hour period. Bob is not, however, be provided with Alice's exact location at any given time, and is prevented from being able to use Alice's location in queries that do not pertain to shopping, such as "universities near Alice."

With permission from the involved parties, access controls and search parameters are maintained and enforced by a service provider or other relevant party that receives the individual's location with permission. If the party in charge of enforcing permissions detects attempted misuse of the permission by the party to whom the individual has granted location access, permission can be suspended or revoked. With consent from users, misuse can be

detected based on past behavioral patterns of users in similar scenarios. When the originally granted permission expires, the individual can be provided with convenient mechanisms to renew the permission as necessary.

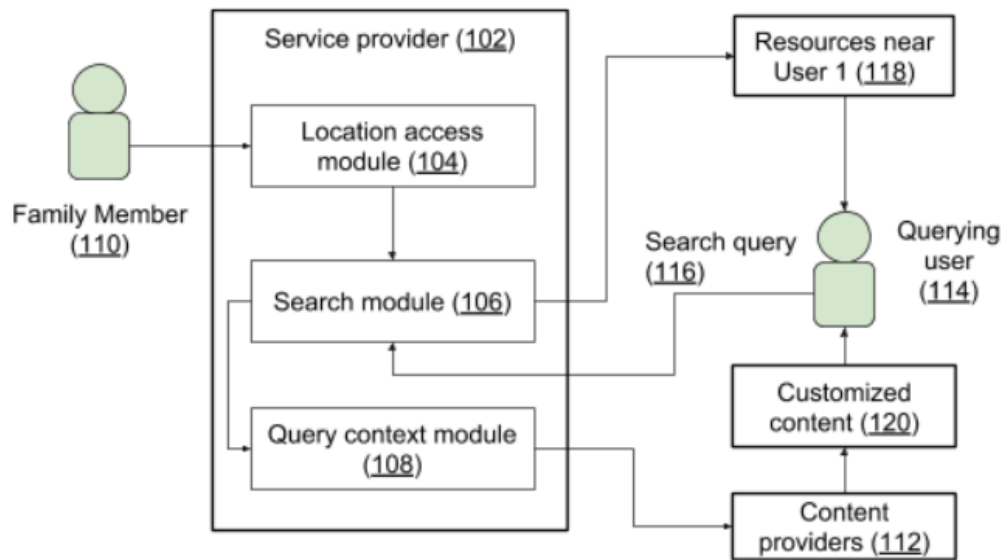


Fig. 1: Searching for resources near the location of another user

Fig. 1 shows an example implementation of the described techniques. A user (110) who is a family member of another user (114) specifies to a search service provider (102) that the other user (114) is permitted to access the user's location to perform queries. The permitted location access can be limited to specific periods and/or specific information categories. A location access module (104) records the location permissions and associated parameters, such as duration, purpose, etc. When the other user issues a query (116) to search for resources near the first user, a search module (106) provides the second user with a list of resources (118) near the first user after the location access is verified via the location access module.

Further, if both users permit, the query and/or the associated results are passed to a query context module (108) to infer the larger context of the query based on a relationship between the

two users. If the two users permit, the inferred context is shared with content provider entities (112), e.g., advertisers. Based on the context, the querying user can be shown contextually customized content recommendations (120), e.g., targeted advertising. Although Fig. 1 shows the location access, search, and query context modules existing within the purview of the search service provider, one or more of these modules can operate independently.

The following examples usage scenarios illustrate the application of the techniques described in this disclosure.

Example 1: Jack is attending a daylong conference in another city and asks his wife Jill at home for recommendations for restaurants near the conference venue where he could have dinner. If Jack has permitted Jill to access his location for the purposes of dining during the conference period and if Jill has accepted the access, then Jill can provide dining suggestions for her husband by searching for “restaurants near Jack” instead of needing to ask Jack for his location and explicitly including the location in her search query, e.g., a more complex query such as “restaurants near convention center XYZ in San Francisco.”

Example 2: Dan wants his son Frank, who lives in a different city, to help him find a physiotherapist. If Dan has allowed Frank to access his location for healthcare purposes and if Frank has accepted the access, then Frank can help Dan by searching for “physio near Dad” instead of needing to specify Dan’s city in the query.

The queries for searches carried out using the described techniques can be typed on a device or issued via voice to a virtual assistant. Similarly, the access to one’s location to others for the purposes of issuing search queries can be provided and managed by any type of input. Moreover, with permission from the parties, existing search mechanisms can be augmented to

support the described techniques. For example, if Alice has granted Bob with access to her location for queries related to shopping, query autocomplete suggestions shown to Bob can include suggestions such as “clothing stores near Alice” when Bob types “clothing stores near” if permitted by Bob.

The described techniques provide a convenient and effective way for users to search for information and resources based on the location of another party that has granted them access to location information for these purposes. These techniques eliminate the interactive step of asking the other party for location and eliminate the need to include explicit mention of the location within a query, thus resulting in shorter queries with less ambiguity regarding location. As such, implementation of the techniques improves the user experience and efficiency of searches that are dependent on the location of another party.

The queries for information based on the location of another party as described above can serve to contextualize the information needs and tasks owing to the relationships between the person performing the search and the person whose location is used for searching purposes, if permitted by both parties. Such contextual information can be used to deliver personalized content likely of high interest to the persons involved in the search task. For instance, such content can include relevant advertising. If permitted by the parties, advertisers can be provided contextual information regarding the query.

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 techniques that enable a seamless user experience when searching for information or resources connected to the location of another party, such as a relative, friend, co-worker, etc., with permission from the parties involved. The trusted party can search for information and resources by forming queries that explicitly indicate the granting individual's location, without having access to the actual location. Location-based queries are restricted to permitted categories. These techniques eliminate the interactive step of asking the other party for location and eliminate the need to include explicit mention of the location within a query, thus resulting in shorter queries with less ambiguity regarding location. As such, implementation of the techniques improves the user experience and efficiency of searches that are dependent on the location of another party.