PERSONALIZED SEARCH: NARROWING RESULTS BY EXCLUDING UNDESIRED DOCUMENTS

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BACKGROUND
A user can query a search system for information or resources. The search system returns a search results list to the user based on the terms of the user’s query. Searches by some users may be repetitive or even habitual over a period of time. Even though results are refreshed periodically by a search provider (i.e. eBay, Amazon), many results are static over time. The user should be able to filter results in a personalized context.

SUMMARY
A technique is provided for filtering certain search results from a user’s search query. On a search results page, the user may have the option of swiping away or otherwise checking off results to hide results from the search results list which the user has already seen and does not want to see again for this query. The system stores this information along with the search query terms, and, upon performing an additional search query with the same or similar search terms, excluding the results that the user has removed from the previous search results list.

DESCRIPTION OF DRAWINGS
Figure 1 shows a conventional search results page.

Figure 2 shows an example search results page that includes a way to hide search results.

Figure 3 shows an example search results page after a user has hidden a search result and performed a subsequent search.
A user can query a search system for information or resources. The search system returns a list of search results to the user based on the terms of the user’s query.

FIG. 1

FIG. 1 shows a conventional search results page. As illustrated in FIG. 1, a user may enter a query for “apple tree” into a search box of a search system. The search system returns a search results list to the user based on the terms of the user’s query.

An example search system can exclude undesired results that a user has already seen and in which the user has no interest. For example, the user may perform a search for “greenhouse gas blog” and indicate sites which the user finds offensive. The offensive sites may
be excluded or hidden from the search results list and subsequent search results list when the system executes the search query again.

As another example, the user may perform a search for “shoe size chart” and remove search results that have images that are confusing. The confusing images will be hidden from the search results list and will not appear in additional search results lists when the user performs subsequent searches using the same or similar search terms.

The example search system relies on the user to indicate preferences for certain results over others in the context of a search and uses the user’s personal preferences to filter search results. The search system may track, upon a user’s consent, search queries issued by the user and the user’s interaction with the search results.

FIG. 2

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1. Apple Tree – Willow Orchards
   Orchard near Mountain View; open from 1-5pm today

2. Apple Tree – Encyclopedia
   Apple Tree entry (see also Fruit Tree)

3. The Apple Tree restaurant
   Dinner in Palo Alto; open today from 7-10pm for dinner
   [HIDE]

4. Apple Tree – Deli
   World famous Turkey, Apple, Bacon sandwiches;
   open from 1-4pm today

5. Apple Tree – definition
   [HIDE]
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FIG. 2 shows an example search results page that includes a way to hide search results. On the search results page, the user can interact with the search results to indicate which search results the user has seen and does not want to see again for the query. The user can swipe or otherwise indicate results that should not be shown again in the results list. For example, as shown in FIG. 2, the user may not like The Apple Tree restaurant and not want search results representing resources associated with the restaurant to show up in any of the user’s search queries. Therefore, the user may click the hide button next to the search result associated with The Apple Tree restaurant. Once the search list is filtered based on the user’s preferences, the user does not have to perform unnecessary browsing since the filtered search results list display is smaller after the user filters out unwanted results.

The example search system creates an implicit body of knowledge for the particular user based on user interactions with the search list (i.e. the user hiding unwanted search results), which can be used to infer personalized ranking of results for new search queries. The example search system can store information about the hidden results and use the stored information to filter subsequent search results.
FIG. 3

FIG. 3 shows an example search results page after a user has hidden a search result and performed a subsequent search using the same search terms as the search queries in FIG. 1 and FIG. 2. For example, as shown in FIGs. 2 and 3, the user has chosen to filter The Apple Tree restaurant out of a search results list for the pending query. When the user searches again for “apple tree,” The Apple Tree restaurant will not show up in the main search results list.

Filters can be applied to queries or search terms that are similar to each other, or to queries that are searching for the same type of search results. For example, in a subsequent search, instead of the search terms being “apple tree,” the search term may be “fruit tree.” The example search system determines whether the pending query, “fruit tree,” is similar or the same as queries stored by the search system. The search system may determine that the queries, “apple tree” and “fruit tree,” are similar in the type of search results for which they are searching.
Therefore, any filter applied to the “apple tree” search results may also be applied to the “fruit tree” search results.

After the system performs the search for “fruit tree,” the search results list may initially include the search result “The Apple Tree restaurant.” However, prior to displaying the search results list to the user, the system can filter the search results list using the filter of the similar query for “apple tree.” In this example, the user hid the search result associated with The Apple Tree restaurant. The example search system may apply the same filter and hide any search results associated with The Apple Tree restaurant. The search system can create the filter based on user behavior to hide “The Apple Tree restaurant” result in a prior search.

Additionally, or alternatively, the example search system may generate a filter that implements a matching algorithm to determine which results to hide when a query similar to the current query is subsequently submitted by the present user. For example, as discussed above, in FIG. 3, the user has chosen to hide The Apple Tree restaurant from a search results list. The filter may match any search result associated with The Apple Tree restaurant including the restaurant’s website, a news website containing an article on the restaurant, and a reservation website featuring the restaurant.

For particular types of content (e.g. document, image, or video), the filter can operate on particular aspects of search results documents, e.g., filter by document title, by domain name, by data fingerprint. The matching algorithm can be defined heuristically or by some other means (e.g., statistically, by machine learning). The input signal, i.e. what the user selects for exclusion may dictate the domain to which the signal is applied. For example, a user may select a particular photo from image search results for exclusion. The image’s data fingerprint (e.g., MD5 hash), or its URL can be used in subsequent searches to exclude the photo from the list of
image results. These filters allow users to permanently filter out results in a personalized context as long as the filters are applied.

On the search results page, the search system provides the user with information about how many results were excluded due to personalized preferences (302). The user interface may give the user a choice to show the hidden, filtered results. If all the results are shown, the user interface may indicate which results would be filtered and give the user the option to hide those results. The user interface also provides the user with a way to clear all personal preference filters associated with a particular search query so that all results may be shown in subsequent searches and/or new filters may be applied.

The example search system can rank each search result by how much the user likes the search result in the context of the search. Although rating systems provide a personalized means of re-ordering search results, traditional rating systems rank results by how much a user likes each search result. For example, the query “vintage lead glass pendant” may list ten products with varying user star ratings. In a rating system, the same ratings are used to rank these products if the search query is “stained glass.” However, in an example search system, the user may have a distinct ranking for a search result depending on the search query.

For example, a search result entitled, “Best Pendant Lighting in May,” may be more relevant to a search for “vintage lead glass pendant” than to a search for “stained glass.” Therefore, the user may give the search result a higher ranking in the search results list associated with the search “vintage lead glass pendant” and a lower ranking, or filter the result out of the search results, in the search results list associated with the search “stained glass.” In an example system, ranking or filtering for a particular search result can be user-specific and associated with a particular search query or type of queries.
ABSTRACT OF THE DISCLOSURE

A technique is provided for filtering search results. On a search results page, the user may interact with search results to hide results from the search results list. The system stores this filter information and, upon performing an additional search query with the same or similar search terms, excludes the search results that match a filter based on the search results, which the user has hidden from the previous search results list.