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Intelligent Generation of Physical Products

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INTELLIGENT GENERATION OF PHYSICAL PRODUCTS

ABSTRACT

Users search for products via a search engine by submitting search queries. Users are presented with search results based on the search queries. The search results may include offers for products that are relevant to a search query or may include no relevant offers. The search system logs search query data including logging whether offers related to the search query were presented in the search result and whether users submitting the search queries selected any offers associated with the search results. The search system designates search queries in which users selected offers in the search results as converted search queries and designates search queries in which users did not select offers in the search results as unconverted search queries.

The search system receives a search query and determines that no offers align with the search query. The search system does not locate any products matching the search query and designates the search query as an unaligned search query. The search system designs a custom product design based on search terms from the unaligned search query and transmits the custom product design to a mobile device associated with the search query. The user of the mobile device selects an option to purchase the custom item or selects an option not to purchase the custom item. If the user selects an option to purchase the custom item, the search system processes a purchase transaction and submits a request to a manufacturing system or to a merchant system to produce the custom item and ship the item to the user. The search system logs the search query as a converted search query. In another example, the search system logs the search query as an unaligned converted search query. If the user of the mobile device selects the option not to purchase the custom item, the search system logs the search query as an unconverted search query. In another example, if the user of the mobile device selects the option

not to purchase the custom item, the search system logs the search query as an unconverted unaligned search query. The search system identifies a threshold number of similar unconverted queries, designs a custom product based on the terms in the similar unconverted queries, and transmits the custom product design to one or more manufacturing systems.

SUGGESTED KEYWORDS

Product, search engine, search query, custom product, custom design, offers, search results, shopping search, search application, purchase.

BACKGROUND

Consumers commonly utilize online search engines to search for products to purchase. Conventionally, users search for products and then view one or more offers for products associated with the search in search results. Users select particular offers presented in the search results to purchase products. However, users are limited to viewing offers associated with existing products that can be shown in search results.

DETAILED DESCRIPTION

A user downloads a search application onto a mobile device. The user desires to find offers for a product. The user selects the search application on a mobile device and enters a search query for the desired product. The search application transmits the user's search query to a search system via the network. Alternatively, the user accesses the website of the search system via a web browser of the mobile device and enters the search query via the website over the network. For example, the user desires to find a product comprising a clock in the shape of a

banana and enters a search query for “banana clock” using the search application or web browser of the mobile device.

A search system associated with the search application receives the search query submitted via the mobile device. If the search system does not find any products that match the search query or finds less than a threshold number of products matching the search query, it designates the search query as an unaligned search query. Alternatively, if the search system finds one or more products that match the search query, it retrieves the product descriptions for the products, inserts the product descriptions for the products in search results, and designates the search query as an aligned search query.

For each unaligned search query, the search system designs a custom product design based on search terms from the unaligned search query and transmits the custom product design to the mobile device associated with the search query. The search system intelligently interprets the search query to determine what word represents the product and which words describe it. For example, the search system would analyze the “banana clock” search query and determine that the term “clock” is the product and the term “banana” is a descriptive term that describes or defines something about how the clock looks. In this example, the search system would generate a number of custom designed products that combine the descriptive look of a banana with the function of a clock. In another example, the search system would analyze the “banana clock” search query and determine that the term “banana” is the product and the term “clock” is a descriptive term that describes or defines something about how the banana looks. Some custom designed products may comprise a yellow clock, some might be a banana that has a picture of a clock on it, and some may comprise a product that looks like a banana with a working clock face on it.

The user is presented with multiple custom designed product options on the mobile device. The user can then select, via the mobile device, the best match from the offered custom designed products. The selection process, in addition to letting the user buy the product, would reinforce the machine learning algorithms and help train for future custom product design. For example, multiple users buy the alarm clock with a banana image on it in response to receiving the search results for “banana clock.” In this example, the machine learning algorithms increase the likelihood that, in response to receiving the search query for “banana clock,” the search system designs a custom designed product comprising an alarm clock with a banana image on it.

The search system transmits descriptions and/or images of the custom designed products together with non-product search results to the mobile device via the network. The descriptions and/or images of the custom designed products are displayed with one or more selectable interface objects that enable the user to initiate a purchase of a particular one of the custom designed product. Each custom designed product comprises a product offer which has never been displayed in search results.

If the user of the mobile device selects the interface object to initiate a purchase of a custom designed product, the search system receives a purchase request from the mobile device, processes a purchase transaction, and submits a production request via the network to a manufacturing system or to a merchant system. The production request comprises a request to produce the custom designed product and ship it to an address of the user. The search system logs the search query that resulted in the purchase of the custom designed product as a converted unaligned search query. If the user of the mobile device selects the interface object indicating a desire not to purchase the custom designed item or ignores the custom designed items displayed

in the search results by not selecting an interface object, the search system logs the search query as an unconverted unaligned search query.

In another example, users search for products via a search engine by submitting search queries to the search system over the network via mobile devices. The mobile devices receive search results and present search results based on the search queries. The search results may include offers for products that are relevant to the search query. Alternatively, there may not be relevant offers for products related to the search query. The search system logs the search query data. The log includes an indication of whether offers related to the search query were presented in the search result, and whether users submitting search queries selected any offers associated with the search results in response to the search queries.

The search system designates the search queries in which users selected offers in the search results as converted search queries. The search system designates search queries in which users did not select offers in the search results as unconverted search queries. The search system identifies a threshold number of similar unconverted queries and designs a custom product based on the terms in the similar unconverted search queries. Similar unconverted search queries are search queries comprising similar grammar, for example searches for “banana clock,” “clock banana,” “banana desk clock,” “banana wall clock” comprise similar unconverted search queries. The threshold number of unconverted queries may be five hundred, five thousand, fifty thousand, or another appropriate threshold number. The search system transmits the custom product design to one or more manufacturing systems or merchant systems. For example, the threshold number of unconverted queries is five thousand and the search system logs 5,001 similar unconverted queries for “banana clock,” “clock banana,” “banana desk clock,” “banana wall clock.” The system designs a clock in the shape of a banana and transmits the design to a manufacturing

system or to a merchant system via the network as well as statistics comprising the number of unconverted similar search queries.

The manufacturing system or merchant system determines whether it would be economically in its interests to manufacture or to order the manufacture of the custom design product. The manufacturing system may edit the design. The manufacturing system manufactures the custom product and partners with the search system to provide offers associated with the new product in search results. A subsequent user searches for “banana clock” and receives an offer for the new product offered by the manufacturing system among search results.

EXAMPLE SYSTEM ARCHITECTURE

Figure 1 illustrates a system to design custom products for unconverted product search queries and unaligned product search queries. A mobile device comprises a user interface, a search application, and a web browser. The user interface enables the user of the mobile device to input commands or data to the mobile device and view output of the mobile device. For example, the user interface may comprise a touch screen interface. The search application communicates with a search system over a network. The user can enter search queries via the user interface using the search application and the mobile device transmits the search query to the search system over the network. The search application receives search results, including offers, from the search system over the network to present to the user via the user interface. Alternatively, the user can access a web site of the search system via a web browser and submit a search query and view search results on the website using the mobile device web browser.

A search system comprises a website. The search system and the mobile device communicate over the network. The search system may receive search queries from a mobile device search application over the network and may transmit search results to the mobile device search application over the network. Alternatively, the search system may receive search queries via a website that the user submitted via the website using the mobile device web browser. The search system searches for products that match search queries to include in search results. The search system may search for products based on the terms in the search queries. In an example, the search system designates search queries as unaligned search queries when the search system does not find any products matching the search query. The search system designs a custom product design based on search terms from the unaligned search query and transmits the custom product design to the mobile device associated with the search query. The search system receives a request from the user to purchase the custom item, processes a transaction, and submits a request to a manufacturing system or to a merchant system to produce the custom item and ship the item to the user. The search system logs search query data including logging whether offers related to the search query were presented in the search result and whether users submitting search queries selected any offers associated with the search results in response to the search queries. The search system designates search queries in which users selected offers in the search results as converted search queries and search queries in which users did not select offers in the search results as unconverted search queries. The search system identifies a threshold number of similar unconverted queries and designs a custom product based on the terms in the similar unconverted queries. The search system transmits the custom product design to one or more manufacturing systems.

The search system communicates with one or more merchant systems and/or manufacturing systems over the network. For example, the search system transmits a custom product design to a merchant system over the network, the merchant system receives the custom product design, and the merchant system produces the custom design product and ships the product to a user. Alternatively, the search system transmits a custom product design to a manufacturing system over the network, the manufacturing system receives the custom product design, and the manufacturing system produces the custom design product and offers the custom design product for merchant systems to resell.

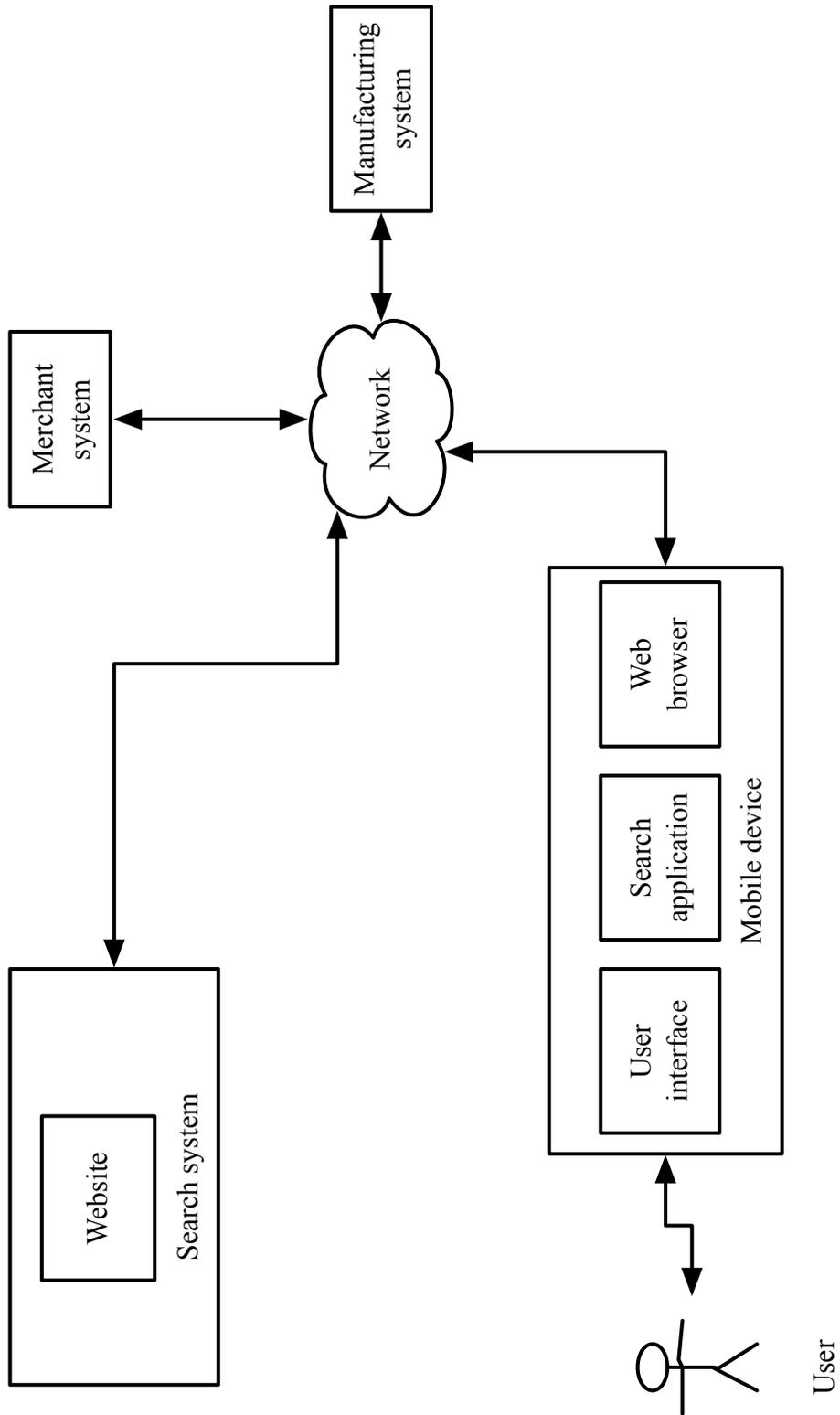


Figure 1