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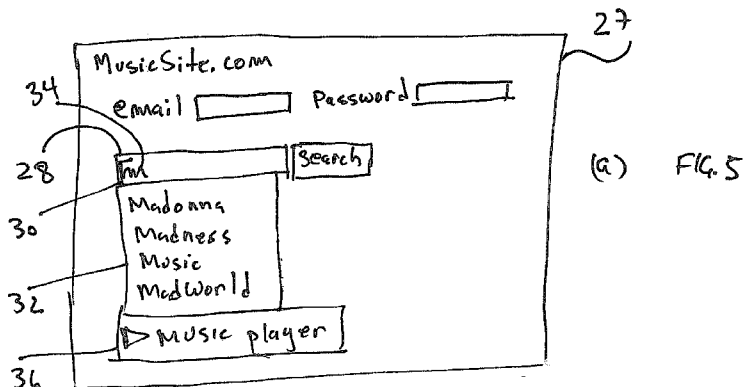
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(54) Title: SYSTEM AND METHOD FOR MODIFYING A WEBPAGE



(57) Abstract: The invention provides a system and method for modifying a webpage. In the system of the invention, a tag classification module classifies tags on the webpage; and a webpage modification module adds one or more predetermined functionalities to the webpage based upon the classification of one or more of the classified tags on the webpage. The functionality added to a webpage by the webpage modification module may be, for example, a menu of items associated with the classification of the tag, one or more activatable images associated with the classification of the tag or a toolbar.

SYSTEM AND METHOD FOR MODIFYING A WEBPAGE

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FIELD OF THE INVENTION

This invention relates to Internet browsing and more particularly, to systems and methods for modifying a webpage.

10 BACKGROUND OF THE INVENTION

The term "customized Internet browsing" is used to refer to web-browser software that interacts with user actions and provides a modified browsing experience. An example of customized browsing is the autocomplete feature, which dynamically offers suggested keywords while the user inputs a search phrase into a search tag. The
15 autocomplete feature can ease and simplify the search process,

For many webpage tag attributes there are no binding standards for the values of the attribute, and different webpages can use uses different technologies and tag attribute values. Thus, in the absence of accepted standards, customized browsing has to be tailored to the webpage. For this reason, customized browsing has so far been very
20 limited.

US Patent No. 7,685,144 to Katragadda discloses a system for automatically generating and maintaining personal data, such as an address book, a financial portfolio, a discussion groups or blogs book, or other types of personal data stores, based on a person's structured search data and/or usage data (e.g., browsing) and/or other sources
25 of personal data (e.g., emails the user receives). Related metadata can also be used in the generating and/or maintaining of the personal data. Dynamic personal data ranking and/or autocomplete functions are also provided, which can be used in conjunction with the automatic generation and maintenance of the user's personal data, to further ease the user's burden in managing and/or handling such data.

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US Patent No. 7,216,292 to Snapper et al. discloses a system and method for learning data values over time as they are entered by a user on a form such as a web page form. An Internet web browser can be modified to suggest previously used data values for any form field that is the same as or similar to a previously used form field.

5 Application programs that use the web browser can gain access to previously used form field values even if they have no knowledge of the field names. Software in a web browser associates field names across different Universal Resource Locators (URLs), so that when a user enters a value into a field (e.g., username) at a first web site, that same value can be automatically suggested when the user displays a different form on a

10 different web site that uses the same field name.

SUMMARY OF THE INVENTION

The present invention provides a method and system for modifying a webpage. The system of the invention interacts with a web browser, and may be used to

15 customize web browsing.

As used herein, the term "tag" refers to a portion of a webpage configured to receive a user input. The system of the invention comprises a tag classification module which infers the classification of one or more of the tags on the webpage. One or more tags classified by the tag classification module is input to a webpage modification

20 module which modifies the properties of the webpage by adding a functionality to the webpage, where the functionality added to the webpage is determined by the classification of the tag.

The system of the invention may also comprise a tag detection module configured to detect tags on a web page. Tags detected by the tag detection module are

25 input to the tag classification module. The tag detection module may scan the webpage code for code indicative of a tag.

In one embodiment of the classification module, the classification module scans the webpage code for code indicative of attributes of the tag from which a classification of the tag can be inferred. In another embodiment of the tag classification module, the

30 tag classification module logs phrases input to a tag over a period of time by users visiting the webpage. A list of input phrases logged by the tag classification module is compiled by the tag classification module that is compared with one or more

predetermined classified lists of phrases. A score of the comparison is calculated indicative of the similarity of the logged list and the predetermined classified list. The classification of the predetermined list having the highest score is then inferred to be the classification of the tag.

5 Tags classified by the tag classification module are input to a webpage modification module that adds one or more functionalities to the webpage according to the classification of one or more tags on the webpage. The functionality added to a webpage may be, for example, a menu of phrases relevant to the classification of a tag. A phrase in the menu may be selected and used in a search.

10 Thus, in its first aspect, the present invention provides a system for modifying a webpage comprising:

(a) a tag classification module configured to classify tags on a webpage; and

15 (b) a webpage modification module configured to add one or more predetermined functionalities to the webpage based upon the classification of one or more of the tags on the webpage classified by the tag classification module.

The system of the invention can be configured to be implemented through browser plug-in, a toolbar, or installed application.

20 The system according may further comprise a tag detection module that may be configured to scan webpage code for code indicative of a tag.

The classification module may be configured to scan webpage code for code indicative of attributes of a tag. The classification module may be further configured to infer a classification from one or more attributes of a tag. The tag classification module may be configured to log phrases input to a tag over a period of time, and may be configured to make a comparison between a list of input phrases logged by the tag classification module with each of one or more predetermined classified lists of items. The tag classification module may calculate a score for each of one or more of the comparison, and infer a classification of the tag based upon one or more of the scores.

25 The calculation of a score may involve a number or fraction of common items on the logged list and the predetermined classified list. The tag classification module may infer that the classification of the tag is the classification of a predetermined classified list

30 having a maximal score.

The functionality added to a webpage by the webpage modification module may be a menu of items associated with the classification of the tag. The functionality added to a webpage by the webpage modification module may be one or more activatable images associated with the classification of the tag. The functionality added to a webpage by the webpage modification module may be a toolbar, such as a toolbar of a music player.

In its second aspect, the present invention provides a method for modifying a webpage comprising:

- (a) classifying tags on the webpage; and
- (b) adding one or more predetermined functionalities to the webpage based upon the classification of one or more of the tags on the webpage classified by the tag classification module.

The method of the invention may be implemented through a browser plug-in, a toolbar, or an installed application.

The method of the invention may further comprise a step of detecting tags on the webpage. The step of detecting tags may comprise scanning webpage code for code indicative of a tag.

The step of classifying tags on the webpage may involve scanning webpage code for code indicative of attributes of a tag. The step of classifying tags may further involve inferring a classification from one or more attributes of a tag. The step of classifying tags may further involve inferring logging phrases input to a tag over a period of time. The step of classifying tags may further involve making a comparison between a list of input logged phrases with each of one or more predetermined classified lists of items. The step of classifying tags may further involve calculating a score for each of one or more of the comparison, and inferring a classification of the tag based upon one or more of the scores. The calculation of a score may involve a number or fraction of common items on the logged list and the predetermined classified list. The step of classifying tags may further involve inferring that the classification of the tag is the classification of a predetermined classified list having a maximal score.

The functionality added to a webpage may be a menu of items associated with the classification of the tag. The functionality added to a webpage may be one or more activatable images associated with the classification of the tag. The functionality added to a webpage may be a toolbar, such as a toolbar of a music player.

BRIEF DESCRIPTION OF THE DRAWINGS

In order to understand the invention and to see how it may be carried out in practice, embodiments will now be described, by way of non-limiting example only, with reference to the accompanying drawings, in which:

Fig. 1 shows a typical webpage;

Fig. 2 shows schematically a system for modifying a webpage in accordance with one embodiment of the invention;

Fig. 3 shows a portion of the code of a webpage;

Fig. 4 shows a database of classified lists of phrases and a database of entries logged in each of several tags; and

Fig. 5a shows functionality added to a webpage related to music and **Fig. 5b** shows functionality added to a webpage related to food.

DETAILED DESCRIPTION OF EMBODIMENTS

Fig. 1 shows a typical webpage **2** having one or more tags **3**. Three tags, **3a**, **3b** and **3c**, are shown in Fig. 1 by way of example only. Each of the tags **3** allows a user to input a string of characters. For example, a user may input a password into the password tag **3a**, an email address into the email tag **3b**, or a keyword into the search tag **3c**.

Fig. 2 shows schematically a system **4** for modifying a webpage in accordance with one embodiment of the invention. The system **4** interacts with a web browser, and comprises a tag detection module **6** configured to detect tags on a web page. Referring again to Fig. 1, the tag detection would detect in the webpage **2** the three tags **3a**, **3b**, and **3c**.

A list of the tags detected on a webpage by the tag detection module **6** is input to a tag classification module **8** which infers the classification of one or more of the tags in the input target list, as explained below. For example, in the webpage **2**, the tag **3a** could be classified by the classification module **8** as a "password tag". The tags **3b** and **3c** could be classified as an "email tag" and a "search tag", respectively. Any one or more of the classified tags is input to a webpage modification module which modifies the properties of the webpage by adding a functionality to the tag, where the functionality added to the tag is determined by the classification of the tag.

The system **4** may be delivered for example, through browser plug-ins, toolbars, or installed applications. As a webpage is loaded by the web browser the system can inject an input tag detection script to the websites code file. The script would then detect the webpage code for input tag candidates.

5 The tag detection module **6** scans a webpage code for code indicative of a tag. Fig. 3 shows a portion **12** of the code for the webpage **2**. For example, in HTML code, the phrase "input type" may indicate the presence of a tag.

 In one embodiment of the classification module **8** of the system **4**, the classification module scans the webpage code for code indicative of attributes of the tag that from which a classification of the tag can be inferred. For example, in the portion
10 **12** of the code shown in Fig. 3, the tag classification module could infer from the term "search" that the tag **3c** (Fig. 1) is a search tag. Similarly, the tag classification module could infer that a tag having the attribute "music" should be classified as "music".

 In another embodiment of the tag classification module **8**, the tag classification
15 module logs phrases input to a tag over a period of time by users visiting the webpage. A list of input phrases logged by the tag classification module is compiled by the tag classification module that is compared with one or more predetermined classified lists of phrases. Fig. 4 shows, by way of example, a database **14** comprising three classified lists of phrases. A "Music List" **16** includes the phrases "Madonna", "Madness", and
20 "Lady Gaga ". A "Movies List" **18** includes the phrases "Avatar", "Gone with the Wind" and "The Godfather". A "General Web Search List" **20** includes the phrases "Google", "Facebook" and "Myspace". Also shown in Fig. 4 is a database **15** including three lists of phrases **22**, **24**, and **26**, compiled by logging phrases input into each of three tags. A list of phrases **22** input into a "Tag 1" includes the input phrases "Madonna",
25 "Madness", "U2" and "Lady gaga". The list **22** is compared with each of one or more of the predetermined classification lists in the database **14**. In this example, the list **22** has at least three phrases in common with the Music List **16**, and has no phrases in common with any of the other lists in the database **14**. When the fraction of phrases common to a logged list and a predetermined list exceeds a predetermined threshold, the tag
30 classification module infers that the classification of the logged list is the classification of the predetermined list in the database. The other tag lists **24** and **26** do not have any phrases in common with any of the predetermined lists in the database **14**, and would not be classified by the tag classification module.

Any one or more of the tags classified by the tag classification module **8** can be input to the webpage modification module **10**. Fig. 5 shows examples of functionalities added to a webpage based upon the classification of a tag on the page. As shown in Fig. **5a**, in a webpage **27**, a tag **28** has been classified by the tag classification module as being a music search tag. Positioning a cursor **30** in the tag **28** causes a menu **32** of phrases relevant to music to appear on the webpage. Inputting one or more characters **34** into the tag **28** may modify the menu **32**. A phrase in the menu may be selected and used in a search. In addition, a toolbar **36** of a functional music player is displayed on the webpage that allows a user to play music selected from the search results.

10 As another example shown in Fig. 5b, in a webpage **40** a tag **42** has been classified by the classification module **8** as being a food search tag. Positioning a cursor **44** in the tag **42** causes a menu **46** of phrases relevant to food to appear on the webpage. A phrase in the menu may be selected and used in a search. In addition, pictures of one or more food items may be displayed on the webpage and selected by the user for use in
15 a search.

CLAIMS

1. A system for modifying a webpage comprising:
 - (a) a tag classification module configured to classify tags on
5 the webpage; and
 - (b) a webpage modification module configured to add one or more predetermined functionalities to the webpage based upon the classification of one or more of the tags on the webpage classified by the tag classification module.
- 10 2. The system according to Claim 1 configured to be implemented through browser plug-in, a toolbar, or installed application.
3. The system according to Claim 1 or 2 further comprising a tag detection module.
4. The system according to Claim 3 wherein the tag detection module is
15 configured to scan webpage code for code indicative of a tag.
5. The system according to any one of the previous claims wherein the classification module is configured to scans webpage code for code indicative of attributes of a tag.
6. The system according to Claim 5 wherein the classification module is further
20 configured to infer a classification from one or more attributes of a tag.
7. The system according to any one of the previous claims wherein the tag classification module is configured to log phrases input to a tag over a period of time.
8. The system according to Claim 7 wherein the tag classification module is configured to make a comparison between a list of input phrases logged by the tag
25 classification module with each of one or more predetermined classified lists of items.
9. The system according to Claim 8 wherein the tag classification module calculates a score for each of one or more of the comparison, and infers a classification of the tag based upon one or more of the scores.
10. The system according to Claim 9 wherein the calculation of a score involves
30 a number or fraction of common items on the logged list and the predetermined classified list.

11. The system according to Claim 9 or 10 wherein the tag classification module infers that the classification of the tag is the classification of a predetermined classified list having a maximal score.

12. The system according to any one of the previous claims wherein the
5 functionality added to a webpage by the webpage modification module is a menu of items associated with the classification of the tag.

13. The system according to any one of the previous claims wherein the functionality added to a webpage by the webpage modification module is one or more activatable images associated with the classification of the tag.

10 14. The system according to any one of the previous claims wherein the functionality added to a webpage by the webpage modification module is a toolbar.

15 15. The system according to Claim 14 wherein the functionality added to a webpage by the webpage modification module is a toolbar of a music player.

16. A method for modifying a webpage comprising:
15 (a) classifying tags on the webpage; and
(b) adding one or more predetermined functionalities to the webpage based upon the classification of one or more of the tags on the webpage classified by the tag classification module.

17. The method according to Claim 16 implemented through a browser plug-in,
20 a toolbar, or an installed application.

18. The method according to Claim 16 or 7 further comprising a step of detecting tags on the webpage.

19. The method according to Claim 18 wherein the step of detecting tags comprises scanning webpage code for code indicative of a tag.

25 20. The method according to anyone of Claims 16 to 19 wherein the step of classifying tags on the webpage involves scanning webpage code for code indicative of attributes of a tag.

21. The method according to Claim 20 wherein the step of classifying tags further involves inferring a classification from one or more attributes of a tag.

30 22. The method according to any one of Claims 16 to 21 wherein the step of classifying tags further involves inferring logging phrases input to a tag over a period of time.

23. The method according to Claim 22 wherein the step of classifying tags further involves making a comparison between a list of input logged phrases with each of one or more predetermined classified lists of items.

24. The method according to Claim 23 wherein the step of classifying tags
5 further involves calculating a score for each of one or more of the comparison, and infers a classification of the tag based upon one or more of the scores.

25. The method according to Claim 24 wherein the calculation of a score involves a number or fraction of common items on the logged list and the predetermined classified list.

10 **26.** The method according to Claim 24 or 25 wherein the step of classifying tags further involves inferring that the classification of the tag is the classification of a predetermined classified list having a maximal score.

27. The method according to any one of Claims 16 to 26 wherein the functionality added to a webpage is a menu of items associated with the classification of
15 the tag.

28. The method according to any one of Claims 16 to 27 wherein the functionality added to a webpage is one or more activatable images associated with the classification of the tag.

29. The method according to any one of Claims 16 to 28 wherein the
20 functionality added to a webpage is a toolbar.

30. The method according to Claim 29 wherein the functionality added to a webpage is a toolbar of a music player.

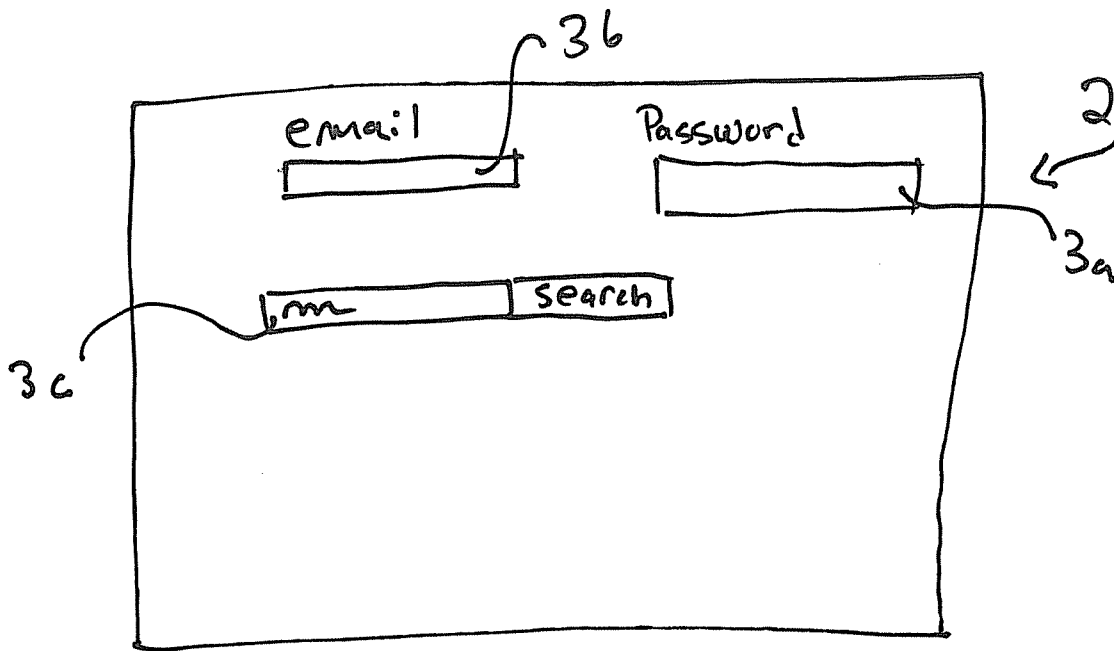


FIG. 1

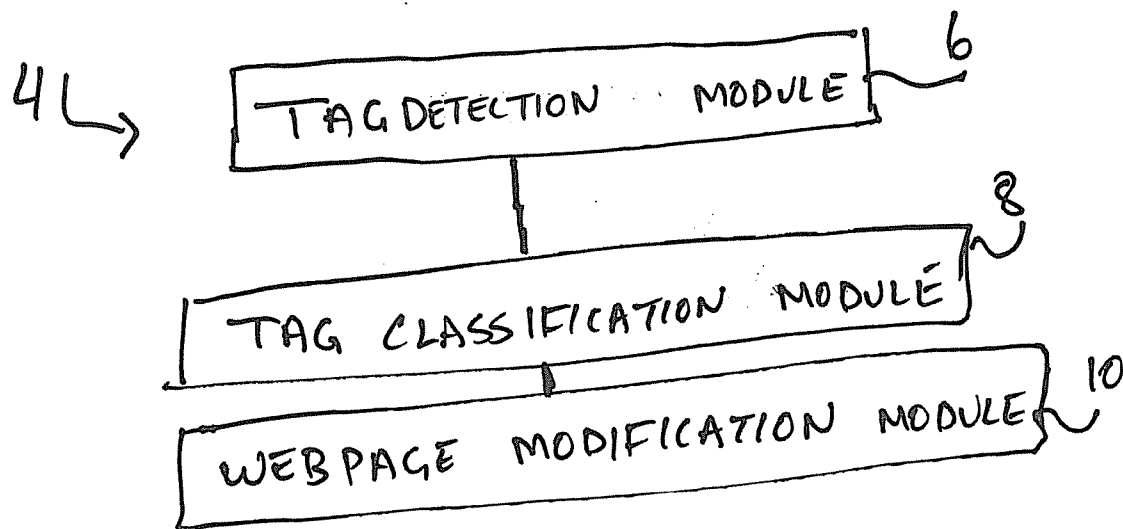


FIG. 2

```
<html>  
<head>  
</head>  
  
<body>  
<input type = text id = "search"  
name = "websearch" class = "src"  
Value = "search here" />
```

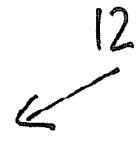


FIG. 3

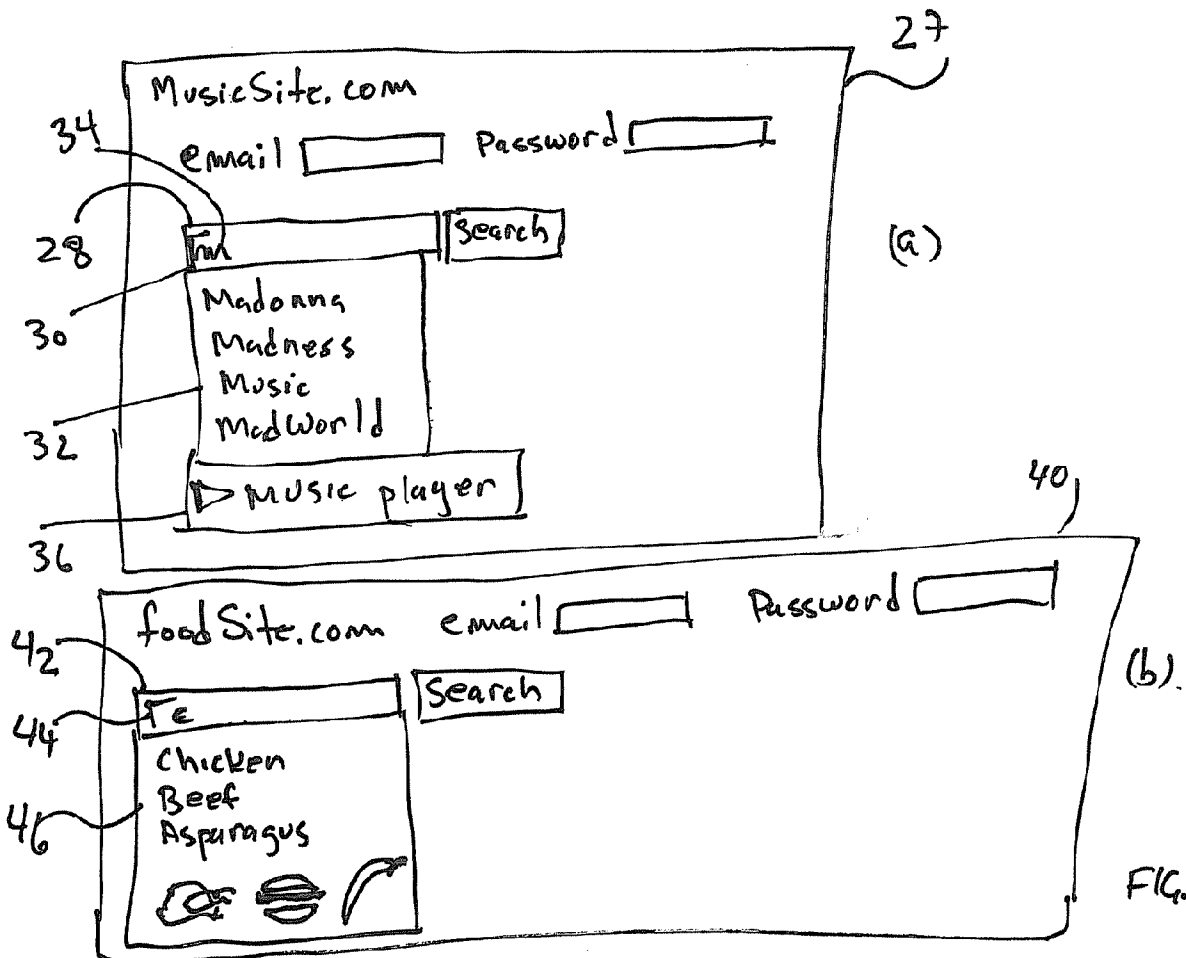


FIG. 5

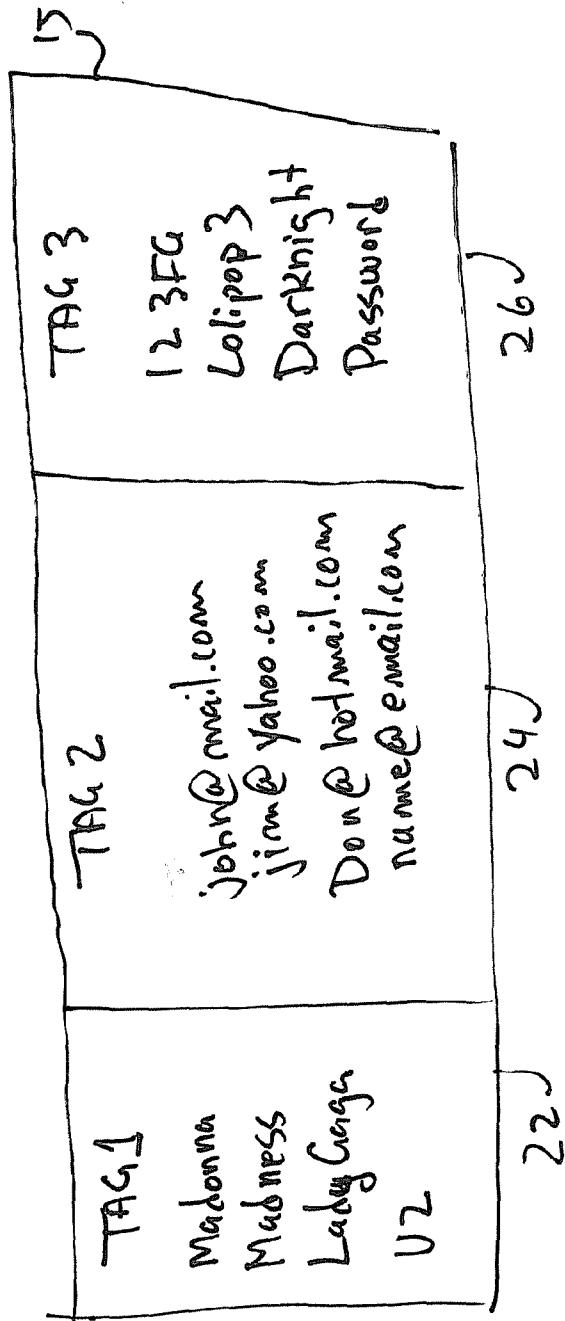
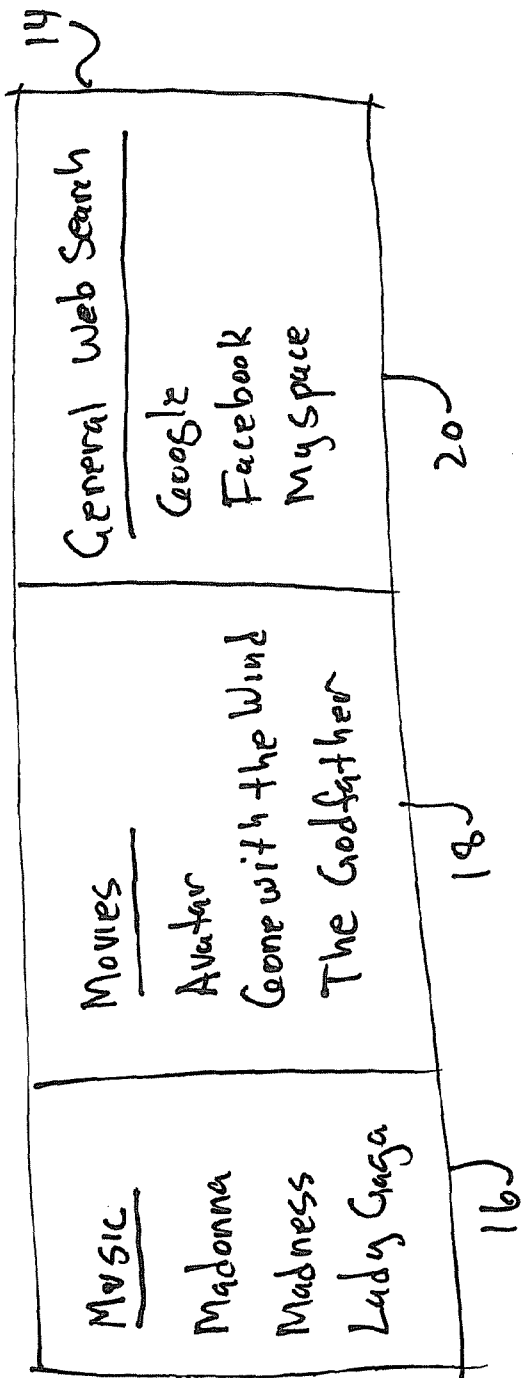


FIG. 4