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*[Continued on next page]*

(54) Title: CONTAINER PERSONALIZATION AND MEDIA ASSET RANKING

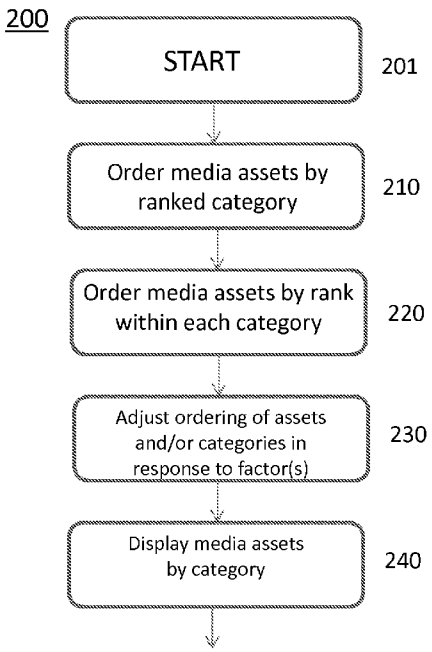


Figure 2

(57) Abstract: A technique for media personalization determines a specific ranking for each media asset and at least one category for each of the media assets. The categories can be based on genre, actor, director, or other factors either generated by a user, a content provider, or other sources. The rankings determine the order that the categories are presented to a user, and the ordering within each category. The rankings are generated based upon inputs from a user, user preferences, data from a content provider, or external sources.

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# CONTAINER PERSONALIZATION AND MEDIA ASSET RANKING

## CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application Serial No. 61/873343, filed on September 3, 2013 and U.S. Provisional Application Serial No.62/007451, filed on June 4, 2014, which is incorporated by reference herein in its entirety.

## TECHNICAL FIELD

The present principles relate to apparatus and methods for providing individualized media asset rankings to a user.

## BACKGROUND OF THE INVENTION

Media content providers such as cable, satellite, or streaming services offer a large selection of movies, shows and videos to their customers. Sorting through the choices and finding something to watch is often an onerous task, and can take much longer than most customers would like.

Many providers display their content by genre or alphabetically. With a large number of titles, the selection process can be time consuming and awkward. In addition, many viewers do not want to go to a master list of all titles every time they search for something to watch.

A need exists for content providers to be able to provide content listings in a more personalized, dynamic, and useful way to allow their customers easier searching and selection.

## SUMMARY OF THE INVENTION

These and other drawbacks and disadvantages of the prior art are addressed by the present principles, which are directed to apparatus and methods for providing individualized media asset rankings to a user.

According to an aspect of the present principles, there are provided several methods and several apparatus for enabling individualized media asset rankings.

A first method for presenting a plurality of media assets according to individualized asset rankings commences by first ordering media assets by media asset category, each media asset category having an first associated ranking value determining an order in which the media asset category is presented. Thereafter, the media assets within each media asset category are ordered with a second associated ranking value determining an order in which each media asset is presented within its corresponding media asset category. The at least one of the ranking values of at least one media asset or media asset category is adjusted responsive to at least one factor, and then displaying the media assets in at least one media asset category in an order based on the adjustment.

According to another aspect of the present principles, an apparatus for presenting a plurality of media assets according to individualized asset rankings comprises a first processing element that orders at least one media asset category using a first ranking value. A second processing element orders a plurality of media assets within each media asset category using a second ranking value. A third processing element receives a vector of factors and generates the first and second ranking values for the media asset categories and the plurality of media assets based on the vector of factors. A display processor presents the plurality of media assets in ranked order within at least one media asset category.

These and other aspects, features and advantages of the present principles will become apparent from the following detailed description of exemplary embodiments, which are to be read in connection with the accompanying drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows one embodiment of a grouping of media assets under the present principles.

Figure 2 shows one embodiment of a method under the present principles.

Figure 3 shows one embodiment of an apparatus under the present principles.

DETAILED DESCRIPTION OF THE INVENTION

In accordance with the present principles, an apparatus and methods provide individualized media asset rankings to a user.

Presently, users can obtain video content through a wide variety of media from different types of content providers. Cable and telephone companies provide television services and pay per view movies, as do satellite and subscription services. Content can be streamed over the Internet through other providers. The number of titles of different content available through any one provider is typically very large.

A user that is trying to select something to watch from one of these providers usually is directed to a visual database of choices. Sometimes the choices are arranged alphabetically or by genre. Sometimes, the newest titles are shown in a separate category. However, none of these methods accounts for the user's preferences and allows the user to tailor the types of content being shown most prominently.

The following apparatus and methods solve this problem by automatically adjusting content listings based on several factors, by allowing content providers to prioritize certain types of content, and by enabling users to adjust their viewing choice preferences.

In a typical content provider arrangement, there is a plurality of media assets presented to a user for rental or purchase. For example, Figure 1 shows one embodiment of a grouping of media assets using the presently described principles. The groupings comprise several categories, or containers, shown in the figure as CON1, CON2, CON3, and CON4. Within each container, media asset titles are labeled as A11, A12, A13, etc., with each label typically comprising the actual titles. Similarly, each container can be associated with a label assigned by a media service, user, or automatically generated using metadata associated with a particular field such as "actor, "genre", for example. In this example, the labels for the containers can be "Superhero Movies" for CON1, "Baseball Media" for CON2, "John's Favorites" for CON3, and "Tony's Recommendations" for CON4, for example. Other such labels can be used. Additional containers and media assets within each container can be added under the presently described principles. The user can create different containers by

sorting an entire database for a certain criteria. For example, a user can create a search for “Movies starring Tom Cruise” and would then have a container listing assets in which Tom Cruise stars. The user can keep this container as one that appears whenever he or she accesses the content listings, or it can simply be a temporary container. Similarly, other criteria can be used to create content containers that are temporary or repeatedly presented to a user.

In accordance with the present principles, the order of media assets within a container, and the ordering of the containers are dependent on a ranking process. In the example of Figure 1, the containers are ranked from highest to lowest such that the highest ranked container is shown at the top, in this case CON1. Likewise, within each container, the assets are ranked highest to lowest from left to right, respectively, such that the highest ranked asset is shown at the left. For CON1, the highest ranked asset would be A11.

In accordance with the present principles, media assets can be grouped in a ranked order, and also in ranked categories. The categories can be assigned by a user, by a content provider, or by some combination of both. The categories can result from user searches. The rankings can be formulated through a combination of user preferences, past choices, social media, hard choices by the user, content provider priorities, or metadata associated with each media asset.

The ranking process can be implemented by considering several factors that together generate an overall ranking for each asset, or for a container. Each of the factors can be weighted to influence the overall ranking. One of the factors can be a user preference maintained in connection with a user profile of user preferences and past user movie selections.

The display of containers and media assets within those containers depends in part on the associated rankings of the elements within the container.

The overall ranking can also be determined by allowing a user or a content provider to simply push an asset, or a container, to a higher or lower priority. For example, if a user really does not care for horror movies, a container labeled “Horror” can be pushed to the bottom of the ranked list of containers so that a user doesn’t need to peruse these titles unless he/she specifically wants to. Within a certain container, a

user may love a certain asset and doesn't mind repeatedly viewing this asset. So this asset can be placed higher (further to the left) in the asset list of its container.

Rankings therefore can be adjusted when a user decides to move the order of either a container or the media assets within the container. If a user moves CON2 above CON1, the rankings of the associated containers will change so that the ranking of CON2 is higher than that of CON1.

Similarly, if a user decides to change the order or add new media assets to a container, the respective rank of such assets will change as well. For example, if A41 is added to CON1 between A12 and A13, the respective rankings for CON1's media assets would be (RA11>RA12>RA41>RA13>RA14>RA15>RA16). Other variations of modifying the order of media assets are possible.

As another example, a content provider or media delivery service can assign rankings to particular assets to promote certain selections or titles in a certain container. If a movie starring a particular actor has just been released in theaters, a content provider may attempt to leverage the publicity of this movie by raising the ranking given to this actor so that his movies appear in a container at the top of the viewer's screen of choices. This method can be used for pay per view choices to increase revenue.

An overall ranking of media assets or media asset categories can be based on a linear or logarithmic combination of some or all of the factors. Ranking values can be assigned based on a complete value for a media asset, or as a summation of different values corresponding to different metadata fields. For example, a ranking value can be generated for an asset from a rankings associated with a metadata field for "Director" or for "Actor" or for "Genre", for example. That is, each actor/director/genre can have a ranking assigned to it which is used to generate an aggregate overall ranking for a media asset:

$$Rank_{Overall} = \alpha * Rank_{Director} + \beta * Rank_{Actor} + \gamma * Rank_{Genre}$$

Each of the sub-rankings for director, actor, and genre, for example, can also have an explicit weight attached to it, or be weighted implicitly. As shown above, α, β, and γ are explicit weights for the individual rankings. Over time, more sub-rankings or factors can

be added to the function that generates an overall ranking for media assets. Likewise, over time, some factors may drop off or be removed from the overall ranking determination.

In accordance with another embodiment of the present principles, a weighting factor, $\delta_R$, is used that affects the weights of different media assets based on external events. For each external event, a particular set of business rules can be written that can be based on metadata, time and/or other factors. Ideally, $\delta_R$ values are temporary, although such weighting factors can be changed by a content provider in accordance with business requirements. This process has the advantage that a content provider can emphasize certain content titles that might be particularly relevant, income-producing, or wanted by viewers.

In another exemplary embodiment, a new movie is set to be released to theaters in two weeks. A business rule can be written in which any metadata associated with the new movie (actors, title, director, etc.) can be used to promote any other movies available through a content provider having similar metadata. If a movie available through the content provider typically has a low ranking, if it shares similar attributes as the soon-to-be-released movie, the weighting factor $\delta_R$ can be added to its rank to increase its visibility to users in their viewing choices. The weighting factor can be reduced by a logarithmic or linear function the longer that the new movie is out, thereby allowing the content provider's movie to gradually fall back to its original ranking. This method advantageously allows content providers the ability to promote certain assets, even for a limited time period, before the asset gradually resumes its normal ranking.

In another embodiment, the weighting factor $\delta_R$ can be added to media assets in accordance with their popularity on social media sites, such as Facebook, Twitter, and Google+, for example. The more a particular media asset is discussed, or "Liked", on these sites, the higher the value of the weighting factor $\delta_R$ to boost its ranking.

A user's preferences and his or her personal profile may constantly be changing, and the ranking generation can adjust based on the newer preferences and profile. In addition, a time constant could be added to his container or media asset preferences that gradually reduces his preferences and pushes new content from content providers back to the higher rankings of the media asset categories. If the time constant is slow

enough, there will be continuity between successive viewings of his media asset categories.

In another embodiment, media asset rankings from social media sites such as Facebook or Twitter, for example, can be imported from friends or other people that "like" or discuss a movie. A weighting factor $\delta_R$(Friend) can be added to the media asset rankings of those assets recommended by friends. Friends can be determined by obtaining permission to scrape a user's friends list, email address list, or other people linked to a media asset provider.

Figure 2 depicts a method 200 for presenting a plurality of media assets in accordance with the present principles. The method commences with start step 201 followed by step 210 which accomplishes ordering of media assets ranked by category. Thereafter, step 220 undergoes execution during which the ordering of media assets within each category by rank occurs. Following step 220, step 230 undergoes execution during which the ordering of assets and/or categories is adjusted responsive to at least one factor. Following step 230, step 240 undergoes execution to display the media assets in ranked order by category.

Figure 3 shows an apparatus 300 for presenting a plurality of media assets in accordance with the present principles. The apparatus 300 comprises a first processing element 310 that orders a plurality of media assets by ranked category using a first ranking. The processing element 310 can receive the media assets from a database of media assets on a first input, and can receive categories and/or rankings on a second input. The apparatus 300 further includes a second processing element 320 whose first input communicates with the output of processing element 310 for ordering media assets within each category by a second ranking. Processing element 320 can also receive media assets from the database of media assets on a second input, and can receive categories and/or rankings on a third input. The processing element 320 has its output in communication with the first input of a third processing element 330 that adjusts the ordering of assets and/or categories based on an overall ranking $Rank_{Overall}$ which is based on at least one factor. The processing element 330 receives a factor vector on its second input and receives data from the media asset database on a third input.

The processing element 330 sends categories and/or rankings for assets and categories on its first output for receipt at the second input of processing element 310 and the third input of processing element 320. The processing element 330 also determines an overall ranking $Rank_{Overall}$ for the assets and categories in the collection of media assets on its second output .

At least one part of the factor vector input to the processing element 330 can contain an explicit ranking that forces the particular media asset to a specific location by giving that asset a $Rank_{Overall}$ relative to the other media assets. In other cases, the $Rank_{Overall}$ is formed by a combination of user preferences, past choices, social media, and other factors, for example. This second output of processing element 330 communicates with a first input of Display Processor 340. A second input of Display Processor 340 communicates with the output of the media assets database. The output of Display Processor 340 presents ordered media assets by ranking in ranked categories for display on a display device (not shown) for viewing by a user.

The aforementioned method and apparatus can also be implemented by processing elements configured as standalone units, as a single unit, or in various other combinations of processing elements and hardware. Likewise, the methods and apparatus can be implemented in a different order, such as ordering assets first, and then categories, based on rankings. Additionally, the media assets can be located in a separate database, or within the apparatus itself, or downloaded from other sources.

One advantage of the described embodiments using the present principles is that media assets can be grouped in a ranked order, and also in ranked categories. The categories can be assigned by a user, by a content provider, or by some combination. The categories can result from user searches. In addition, the rankings are formulated through a combination of user preferences, past choices, social media, hard choices by the user, content provider priorities, or metadata associated with each media asset.

One or more implementations having particular features and aspects of the presently preferred embodiments of the principles have been provided. However, features and aspects of described implementations can also be adapted for other implementations. For example, these implementations and features can be used in the

context of other video devices or systems. The implementations and features need not be used in a standard.

Reference in the specification to “one embodiment” or “an embodiment” or “one implementation” or “an implementation” of the present principles, as well as other variations thereof, means that a particular feature, structure, characteristic, and so forth described in connection with the embodiment is included in at least one embodiment of the present principles. Thus, the appearances of the phrase “in one embodiment” or “in an embodiment” or “in one implementation” or “in an implementation”, as well any other variations, appearing in various places throughout the specification are not necessarily all referring to the same embodiment.

The implementations described herein can be implemented in, for example, a method or a process, an apparatus, a software program, a data stream, or a signal. Even if only discussed in the context of a single form of implementation (for example, discussed only as a method), the implementation of features discussed can also be implemented in other forms (for example, an apparatus or computer software program). An apparatus can be implemented in, for example, appropriate hardware, software, and firmware. The methods can be implemented in, for example, an apparatus such as, for example, a processor, which refers to processing devices in general, including, for example, a computer, a microprocessor, an integrated circuit, or a programmable logic device. Processors also include communication devices, such as, for example, computers, cell phones, portable/personal digital assistants ("PDAs"), and other devices that facilitate communication of information between end-users.

Implementations of the various processes and features described herein can be embodied in a variety of different equipment or applications. Examples of such equipment include a web server, a laptop, a personal computer, a cell phone, a PDA, and other communication devices. As should be clear, the equipment can be mobile and even installed in a mobile vehicle.

Additionally, the methods can be implemented by instructions being performed by a processor, and such instructions (and/or data values produced by an implementation) can be stored on a processor-readable medium such as, for example, an integrated circuit, a software carrier or other storage device such as, for example, a

hard disk, a compact disc, a random access memory ("RAM"), or a read-only memory ("ROM"). The instructions can form an application program tangibly embodied on a processor-readable medium. Instructions can be, for example, in hardware, firmware, software, or a combination. Instructions can be found in, for example, an operating system, a separate application, or a combination of the two. A processor can be characterized, therefore, as, for example, both a device configured to carry out a process and a device that includes a processor-readable medium (such as a storage device) having instructions for carrying out a process. Further, a processor-readable medium can store, in addition to or in lieu of instructions, data values produced by an implementation.

As will be evident to one of skill in the art, implementations can use all or part of the approaches described herein. The implementations can include, for example, instructions for performing a method, or data produced by one of the described embodiments.

A number of implementations have been described. Nevertheless, it will be understood that various modifications can be made. For example, elements of different implementations can be combined, supplemented, modified, or removed to produce other implementations. Additionally, one of ordinary skill will understand that other structures and processes can be substituted for those disclosed and the resulting implementations will perform at least substantially the same function(s), in at least substantially the same way(s), to achieve at least substantially the same result(s) as the implementations disclosed. Accordingly, these and other implementations are contemplated by this disclosure and are within the scope of these principles.

# CLAIMS

1. A method for presenting a plurality of media assets, comprising:

ordering media assets by category, each category having a first ranking determining an order in which the category is presented;

ordering media assets within each category with a second ranking determining an order in which each media asset is presented within its corresponding category;

adjusting at least one of said rankings of at least one media asset or category responsive to at least one factor.

2. The method of Claim 1, wherein the adjusting further comprises using one of a logarithmic or linear combination of factors to determine a ranking of a media asset.

3. The method of Claim 1, wherein said at least one factor comprises at least one of user preferences, past choices, social media data, content provider data, or metadata associated with each media asset.

4. The method of Claim 1, wherein a weighting factor is associated with at least one ranking value that adjusts the ranking value as a function of time.

5. The method of Claim 1, further comprising:

displaying said media assets in at least one category in an order based on said adjusting step.

6. An apparatus for presenting a plurality of media assets, comprising:

a first processing element that orders at least one media asset category using a first ranking value;

a second processing element that orders a plurality of media assets within each said media asset category using a second ranking value;

a third processing element that receives a vector of factors and that generates said first and second ranking values for said media asset categories and said plurality of media assets based on said vector of factors; and

a display processor that presents for display said plurality of media assets in ranked order within at least one said media asset category.

7. The apparatus of Claim 6, wherein said third processing element uses one of a logarithmic or linear combination of factors to determine a ranking of a media asset.

8. The apparatus of Claim 6, wherein said at least one factor comprises at least one of user preferences, past choices, social media data, content provider data, or metadata associated with each media asset.

9. The apparatus of Claim 6, wherein a weighting factor is associated with at least one ranking value that adjusts the ranking value as a function of time.

10. The apparatus of Claim 6, further comprising a display that displays said media assets in at least one category in an order generated by said display processor.

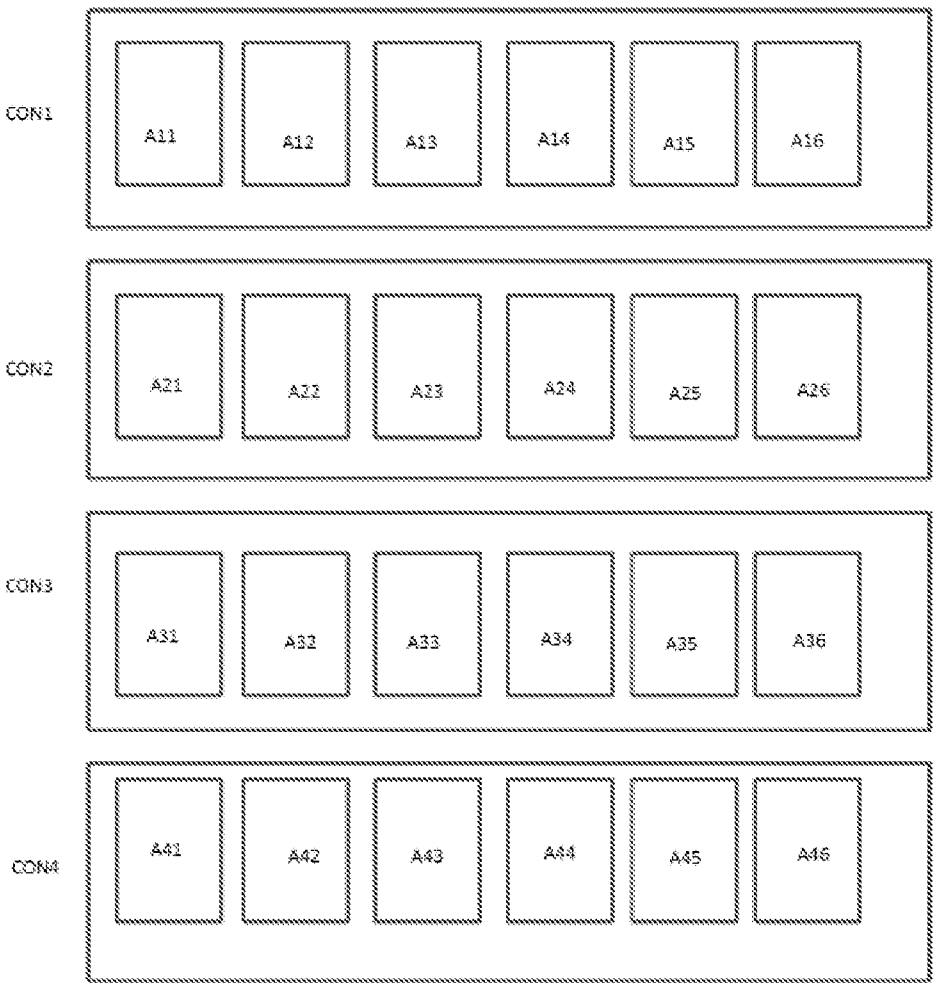
CON1
A11
A12
A13
A14
A15
A16
CON2
A21
A22
A23
A24
A25
A26
CON3
A31
A32
A33
A34
A35
A36
CON4
A41
A42
A43
A44
A45
A46

FIGURE 1

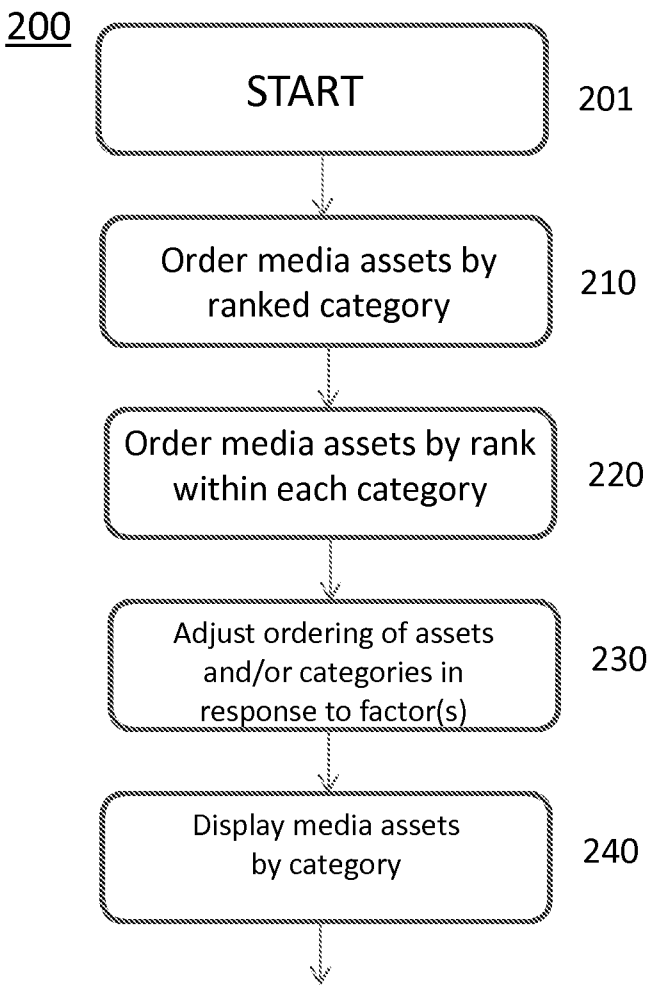
200
START
201
Order media assets by ranked category
210
Order media assets by rank within each category
220
Adjust ordering of assets and/or categories in response to factor(s)
230
Display media assets by category
240

Figure 2

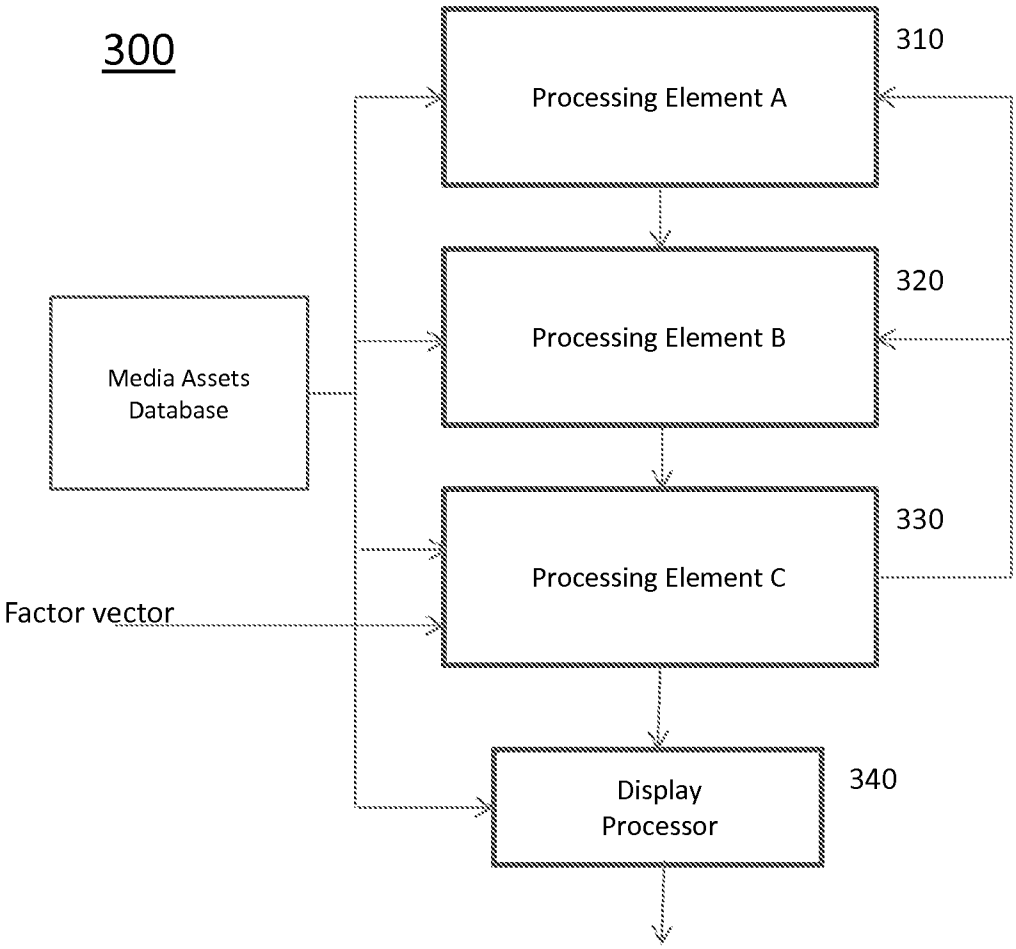
300
Processing Element A
310
Processing Element B
320
Media Assets Database
Processing Element C
330
Factor vector
Display Processor
340

Figure 3

# INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/053687

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F17/30
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | US 2006/143236 A1 (WU MICHAEL [US])<br>29 June 2006 (2006-06-29)<br>abstract<br>paragraph [0002] - paragraph [0020]<br>paragraph [0072] - paragraph [0078]<br>paragraph [0086] - paragraph [0102]<br>claims 1-32; figures 1-24<br>paragraphs [0107] - [0110]<br>----- | 1-10 |
| X | US 2011/314030 A1 (BURBA ALEXANDER [US] ET AL) 22 December 2011 (2011-12-22)<br>abstract<br>paragraph [0001] - paragraph [0005]<br>paragraph [0016] - paragraph [0051]<br>-----<br>-/-- | 1-10 |

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 9 December 2014 | 18/12/2014 |

| Name and mailing address of the ISA/ | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040,<br>Fax: (+31-70) 340-3016 | Skomorowski, Markus |

Form PCT/ISA/210 (second sheet) (April 2005)

# INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/053687

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | YEE KA-PING ET AL: "Faceted Metadata for Image Search and Browsing", CHI 2003. CONFERENCE PROCEEDINGS. CONFERENCE ON HUMAN FACTORS IN COMPUTING SYSTEMS. FORT LAUDERDALE, FL, APRIL 5 - 10, 2003; [CHI CONFERENCE PROCEEDINGS. HUMAN FACTORS IN COMPUTING SYSTEMS], NEW YORK, NY : ACM, US, 5 April 2003 (2003-04-05), pages 1-8, XP002387111, DOI: 10.1145/642611.642613 ISBN: 978-1-58113-630-2 abstract page 1, left-hand column, paragraph "Introduction" - page 4, left-hand column, paragraph "Prior Work" ----- | 1-10 |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2014/053687

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| US 2006143236 A1 | 29-06-2006 | NONE | |
| US 2011314030 A1 | 22-12-2011 | NONE | |