Abstract:

Title: A SYSTEM APPARATUS CIRCUIT METHOD AND ASSOCIATED COMPUTER EXECUTABLE CODE FOR GENERATING AND PROVIDING CONTENT RECOMMENDATIONS TO A GROUP OF USERS

Fig. 10

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(54) Title: A SYSTEM APPARATUS CIRCUIT METHOD AND ASSOCIATED COMPUTER EXECUTABLE CODE FOR GENERATING AND PROVIDING CONTENT RECOMMENDATIONS TO A GROUP OF USERS

Abstract: Disclosed are systems, apparatuses, circuits, methods and computer executable code sets for generating and providing content recommendations to match the tastes and preferences of a group of users. A Recommendation Engine is used for generating two or more individual content recommendation sets for each of the members in the user group. A Recommendation Aggregation Module is used for adding and combining the individual content recommendation sets into an aggregated recommendation set. A Recommendation Selection Module is used for selecting at least a subset of the content items in the aggregated recommendation set for inclusion in a content recommendation result set. A Profile Engine is used for building individual group users profiles from which a merged group profile is constructed, or for building a single joint group profile based on inputs from multiple group users.
PATENT APPLICATION

For:
A System Apparatus Circuit Method and Associated Computer
Executable Code for Generating and Providing Content
Recommendations to a Group of Users

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FIELD OF THE INVENTION
[001] The present invention generally relates to the fields of content matching and recommendation. More specifically, the present invention relates to a system, apparatus, circuit, method and associated computer executable code for generating and providing content recommendations to a group of users.

RELATED APPLICATIONS
[002] This application is a continuation-in-part of U.S. Pat. App. No.: 12/859,248, filed with the USPTO on August 18th, 2010, which is hereby incorporated by reference in its entirety.

BACKGROUND
[003] In the field of content matching and recommendation, Recommender systems are active information filtering systems that attempt to present to the user information items (film, television, music, books, news, web pages) the user is interested in. These systems add or remove information items to the information flowing towards the user. Recommender systems typically use collaborative filtering approaches or a combination of the collaborative filtering and content-based filtering approaches.
[004] Taking the above into account, there clearly remains a need, in the fields of content matching and recommendation, for systems apparatuses circuits methods and associated
computer executable code sets that introduce unique approaches to content recommendation, adapted to match the tastes and preferences of not a single user but rather a group of users, based on their various preferences and taste profiles.

**SUMMARY OF THE INVENTION**

[005] Below are described a number of novel, innovative systems, apparatuses, circuits, methods and associated computer executable code sets for generating and providing content recommendations to a group of users. According to some embodiments of the present invention, there may be provided a computerized recommendation system for generating and providing content recommendations to match the tastes and preferences of a group of users, wherein the system includes: (1) a Recommendation Engine for generating one or more individual content recommendation sets for each of the members in the user group; (2) a Recommendation Aggregation Module for adding and combining the individual content recommendation sets into an aggregated recommendation set; and (3) a Recommendation Selection Module for selecting at least a subset of the content items in the aggregated recommendation set for inclusion in a content recommendation result set and providing it to the pertinent group of users.

[006] According to some embodiments of the present invention, the Recommendation Engine may generate the individual content recommendation sets based on: (1) content items in one or more functionally associated Content Storage databases; and (2) users inputs relating to: tastes, preferences, habits and/or feedback on previously consumed content items, in one or more functionally associated Users’ Inputs Storage databases. According to some embodiments, the Recommendation Selection Module, when selecting content items, may reference one or more functionally associated Users’ Weights Storage databases. Content items initially recommended to users having a higher weight (e.g. group initiators) may receive higher preference for inclusion in the content recommendation result set, whereas content items initially recommended to users having a lower weight (e.g. parents in parent-kids groups) may receive lower preference for inclusion in the content recommendation result set.

[007] According to some embodiments of the present invention, the Recommendation Selection Module, as part of selecting at least a subset of the content items in the
aggregated recommendation set, may utilize one or more of the following components: (1) a Per Item User Counter for recording and counting the number of users to which a given content item was recommended; (2) an Item-User Relevancy Level Calculator for estimating how relevant is a given content item to at least some of the members in the user group; (3) a Previous Items Similarity Calculator for referencing a Previous Recommendations Log database and estimating the similarity level of a given content item to content items selected for the same, and/or a partially overlapping, group(s) in previous rounds of selection; (4) a Direct User Input Analyzer for processing and considering explicit and/or implicit inputs, of at least some of the members in the user group, relating to a given content item; and (5) a Community Ratings Analyzer for referencing a proprietary and/or third party Community Ratings Storage database and giving a higher preference for inclusion in the content recommendation result set to content items having higher popularity in the community.

[008] According to some embodiments of the present invention, the Recommendation Engine may be functionally associated with a Content Catalogs Prioritization Module for primarily, or only, offering content items from specific preferred catalogues such as, but not limited to: catalogues previously used for supplying content item recommendations for the same group initiator or group members, catalogues of third parties offering higher profit margins to recommending entities, catalogues more popular among other recommendation services. According to some embodiments of the present invention, the Recommendation Engine may comprise, and utilize as part of generating two or more individual content recommendation sets for each of the members in the user group, any content recommendation, content matching, or content analysis engine known today or to be devised in the future, such as, but not limited to: statistical recommendation engine(s) (e.g. a collaborative filtering engine) and/or semantic recommendation engine(s) (e.g. an incremental taste engine).

[009] According to some embodiments of the present invention, the Recommendation Selection Module may provide, along with the selected content recommendation result set, a per-user content match/confidence rates feedback, for content items in the result set. Members of the pertinent group of users may be accordingly presented, for example over a Group Recommendation Content Output Device, with data indicative of the direct
match rate between content items recommended to their entire group and their own individual profile/characteristics, and the confidence of the system in that assessment.

[0010] According to some embodiments of the present invention, there may be provided a computerized recommendation system for generating and providing content recommendations to match the tastes and preferences of a group of users, wherein the system includes: (1) a Profile Engine for generating two or more individual user profiles for each of the members in the user group; (2) a Profile Aggregation Module for adding and combining the individual user profiles into a merged group profile; and (3) a Recommendation Engine for generating a content recommendation set for the user group, at least partially based on the merged group profile.

[0011] According to some embodiments, the Profile Aggregation Module, when adding and combining the individual user profiles into a merged group profile, may reference one or more functionally associated Users' Weights Storage databases. User profiles belonging to users having a higher weight (e.g. group initiators) may receive higher effect and thus be more dominant in the Merged Group Profile for which the content recommendation result set is generated, whereas user profiles belonging to users having a lower weight (e.g. parents in parent-kids groups) may receive lower effect and thus be less dominant in the Merged Group Profile for which the content recommendation result set is generated.

[0012] According to some embodiments of the present invention, there may be provided a computerized recommendation system for generating and providing content recommendations to match the tastes and preferences of a group of users, wherein the system includes: (1) a Profile Engine for generating a single joint users' taste profile which is generated based on user inputs from two or more members of the user group (i.e. inputs from multiple users are treated as inputs from a single virtual user and the generated profile is designed to match the virtual user's inputs-based taste/preferences); (2) a Recommendation Engine for generating a joint profile content recommendation set for the user group, at least partially based on the joint users' taste profile; and (3) a Recommendation Selection Module for selecting at least a subset of the content items in the joint profile content recommendation set for inclusion in a content recommendation result set and providing it to the pertinent group of users.
According to some embodiments, the Profile Engine, when generating a single joint users' taste profile which is generated based on user inputs from two or more members of the user group, may reference one or more functionally associated Users' Weights Storage databases. User inputs belonging to users having a higher weight (e.g. group initiators) may receive higher effect and thus have more influence on the resulting joint users' taste profile, whereas user inputs belonging to users having a lower weight (e.g. parents in parent-kids groups) may receive lower effect and thus have less influence on the resulting joint users' taste profile.
BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The subject matter regarded as the invention is particularly pointed out and distinctly claimed in the concluding portion of the specification. The invention, however, both as to organization and method of operation, together with objects, features, and advantages thereof, may best be understood by reference to the following detailed description when read with the accompanying drawings:

[0015] In figure 1A there is shown, in accordance with some embodiments of the present invention, an exemplary system for generating and providing content recommendations to match the tastes and preferences of a group of users;

[0016] In figure 1B there is shown, in accordance with some embodiments of the present invention, a flowchart of the main steps executed by an exemplary computerized system for generating and providing content recommendations to match the tastes and preferences of a group of users;

[0017] In figure 1C there is shown, in accordance with some embodiments of the present invention, a flowchart of the main steps and decisions executed by a simplified exemplary system for generating and providing content recommendations to match the tastes and preferences of a group of users;

[0018] In figure 1D there is shown in further detail, a Recommendation Selection Module of an exemplary system for generating and providing content recommendations to match the tastes and preferences of a group of users, in accordance with some embodiments of the present invention;

[0019] In figure 1E there is shown, in accordance with some embodiments of the present invention, an exemplary system for generating and providing content recommendations to match the tastes and preferences of a group of users, wherein the Recommendation Engine is functionally associated with a Content Catalogs Prioritization Module;

[0020] In figure 2A there is shown, in accordance with some embodiments of the present invention, an exemplary, merged profile based, system for generating and providing content recommendations to match the tastes and preferences of a group of users;

[0021] In figure 2B there is shown, in accordance with some embodiments of the present invention, a flowchart of the main steps executed by an exemplary, merged profile based,
computerized system for generating and providing content recommendations to match the tastes and preferences of a group of users;

[0022] In figure 2C there is shown, in accordance with some embodiments of the present invention, a flowchart of the main steps and decisions executed by a simplified exemplary, merged profile based, system for generating and providing content recommendations to match the tastes and preferences of a group of users;

[0023] In figure 3A there is shown, in accordance with some embodiments of the present invention, an exemplary, joint profile based, system for generating and providing content recommendations to match the tastes and preferences of a group of users;

[0024] In figure 3B there is shown, in accordance with some embodiments of the present invention, a flowchart of the main steps executed by an exemplary, joint profile based, computerized system for generating and providing content recommendations to match the tastes and preferences of a group of users; and

[0025] In figure 3C there is shown, in accordance with some embodiments of the present invention, a flowchart of the main steps and decisions executed by a simplified exemplary, merged profile based, system for generating and providing content recommendations to match the tastes and preferences of a group of users.
DETAILED DESCRIPTION

[0026] In the following detailed description, numerous specific details are set forth in order to provide a thorough understanding of the invention. However, it will be understood by those skilled in the art that the present invention may be practiced without these specific details. In other instances, well-known methods, procedures, components and circuits have not been described in detail so as not to obscure the present invention.

[0027] Unless specifically stated otherwise, as apparent from the following discussions, it is appreciated that throughout the specification discussions utilizing terms such as "processing", "computing", "calculating", "determining", or the like, refer to the action and/or processes of a computer or computing system, or similar electronic computing device, that manipulate and/or transform data represented as physical, such as electronic, quantities within the computing system's registers and/or memories into other data similarly represented as physical quantities within the computing system's memories, registers or other such information storage, transmission or display devices.

[0028] Embodiments of the present invention may include apparatuses for performing the operations herein. Such apparatus may be specially constructed for the desired purposes, or it may comprise a general-purpose computer selectively activated or reconfigured by a computer program stored in the computer. Such a computer program may be stored in a computer readable storage medium, such as, but is not limited to, any type of disk including floppy disks, optical disks, CD-ROMs, magnetic-optical disks, read-only memories (ROMs), random access memories (RAMs) electrically programmable read-only memories (EPROMs), electrically erasable and programmable read only memories (EEPROMs), magnetic or optical cards, or any other type of media suitable for storing electronic instructions, and capable of being coupled to a computer system bus.

[0029] The processes and displays presented herein are not inherently related to any particular computer or other apparatus. Various general-purpose systems may be used with programs in accordance with the teachings herein, or it may prove convenient to construct a more specialized apparatus to perform the desired method. The desired structure for a variety of these systems will appear from the description below. In addition, embodiments of the present invention are not described with reference to any
particular programming language. It will be appreciated that a variety of programming languages may be used to implement the teachings of the inventions as described herein.

[0030] The present invention includes systems, apparatuses, circuits, methods and associated computer executable code for generating and providing content recommendations to a group of users.

[0031] According to some embodiments of the present invention, there may be provided a computerized recommendation system for generating and providing content recommendations to match the tastes and preferences of a group of users, wherein the system includes: (1) a Recommendation Engine for generating two or more individual content recommendation sets for each of the members in the user group; (2) a Recommendation Aggregation Module for adding and combining the individual content recommendation sets into an aggregated recommendation set; and (3) a Recommendation Selection Module for selecting at least a subset of the content items in the aggregated recommendation set for inclusion in a content recommendation result set and providing it to the pertinent group of users.

[0032] In figure 1A there is shown, in accordance with some embodiments of the present invention, an exemplary system for generating and providing content recommendations to match the tastes and preferences of a group of users, comprising: a Recommendation Engine (10) for generating two or more individual content recommendation sets for each of the members in the user group; a Recommendation Aggregation Module (20) for adding and combining the individual content recommendation sets into an aggregated recommendation set; and a Recommendation Selection Module (30) for selecting at least a subset of the content items in the aggregated recommendation set for inclusion in a content recommendation result set and providing it to the pertinent group of users.

[0033] The Recommendation Engine (10) receives a recommendation request initiated by a Group Initiating User (100). Based on user inputs, from a Users' Inputs Storage (210), of the Group Initiating User (100) and other Group Users (110, 120); the Recommendation Engine (10) selects an individual set of recommendations, from a Content Storage (220), for each of the group members. The Recommendation Aggregation Module (20) adds and combines the individual content recommendation sets
into an aggregated recommendation set that may include some or all of the recommendations in the individual sets. The Recommendation Selection Module (30) selects at least a subset of the content items in the aggregated recommendation set for inclusion in a content recommendation result set and provides it to the pertinent group of users. According to some embodiments, the Recommendation Selection Module (30) considers users' weights, from a Users’ Weights Storage (230), prioritizing items which are available to, and/or were recommended to, users having a greater weight.

[0034] In figure IB there is shown, in accordance with some embodiments of the present invention, a flowchart of the main steps executed by an exemplary computerized system for generating and providing content recommendations to match the tastes and preferences of a group of users. The method exemplified comprises the following steps: Receiving a recommendation request, for a group of users, from the user initiating the group (1000); Selecting an individual set of recommendations for each group user based on his available (e.g. stored, accessed, received) inputs (1100); Building an aggregated recommendations set based on recommendations from the user-individual recommendation sets (1200); and Selecting from the aggregated recommendations set a subset of item recommendations as a result set, possibly considering collected per-user data and/or weights allocated to users (1300).

[0035] In figure IC there is shown, in accordance with some embodiments of the present invention, a flowchart of the main steps and decisions executed by a simplified exemplary system for generating and providing content recommendations to match the tastes and preferences of a group of users. In this example, a recommendation request for a group of 2 users is received (1500). User A taste profile includes 2 tastes: A1: Twists and Turns, Mind Bending, Uncover Truth; A2: Special Effects, Stylized, Master Villain; User A is the group recommendation request initiator. User B taste profile includes 1 taste: B1: non-linear, mind bending; User B has already watched the movie 'Iron Man'.


[0037] According to some embodiments of the present invention, the Recommendation Engine may generate the individual content recommendation sets based on: (1) content items in one or more functionally associated Content Storage databases; and (2) users inputs relating to: tastes, preferences, habits and/or feedback on previously consumed content items, in one or more functionally associated Users' Inputs Storage databases. According to some embodiments, the Recommendation Selection Module, when selecting content items, may reference one or more functionally associated Users' Weights Storage databases. Content items initially recommended to users having a higher weight (e.g. group initiators) may receive higher preference for inclusion in the content recommendation result set, whereas content items initially recommended to users having a lower weight (e.g. parents in parent-kids groups) may receive lower preference for inclusion in the content recommendation result set.

[0038] According to some embodiments of the present invention, the Recommendation Selection Module, as part of selecting at least a subset of the content items in the aggregated recommendation set, may utilize one or more of the following components: (1) a Per Item User Counter for recording and counting the number of users to which a given content item was recommended; (2) an Item-User Relevancy Level Calculator for estimating how relevant is a given content item to at least some of the members in the user group; (3) a Previous Items Similarity Calculator for referencing a Previous Recommendations Log database and estimating the similarity level of a given content item to content items selected for the same, and/or a partially overlapping, group(s) in previous rounds of selection; (4) a Direct User Input Analyzer for processing and considering explicit and/or implicit inputs, of at least some of the members in the user group, relating to a given content item; and (5) a Community Ratings Analyzer for referencing a proprietary and/or third party Community Ratings Storage database and
giving a higher preference for inclusion in the content recommendation result set to content items having higher popularity in the community.

[0039] In figure ID there is shown in further detail, a Recommendation Selection Module (30) of an exemplary system for generating and providing content recommendations to match the tastes and preferences of a group of users, in accordance with some embodiments of the present invention, comprising: a Per Item User Counter (310) for recording and counting the number of users to which a given content item was recommended; an Item-User Relevancy Level Calculator (320) for estimating how relevant is a given content item to at least some of the members in the user group; a Previous Items Similarity Calculator (330) for referencing a Previous Recommendations Log (331) database and estimating the similarity level of a given content item to content items selected for the same, and/or a partially overlapping, group(s) in previous rounds of selection; a Direct User Input Analyzer (340) for processing and considering explicit and/or implicit inputs, of at least some of the members in the user group, relating to a given content item; and a Community Ratings Analyzer (350) for referencing a proprietary and/or third party Community Ratings Storage (351) database and giving a higher preference for inclusion in the content recommendation result set to content items having higher popularity in the community.

[0040] According to some embodiments of the present invention, the Recommendation Engine may be functionally associated with a Content Catalogs Prioritization Module for primarily, or only, offering content items from specific preferred catalogues such as, but not limited to: catalogues previously used for supplying content item recommendations for the same group initiator or group members, catalogues of third parties offering higher profit margins to recommending entities, catalogues more popular among other recommendation services. According to some embodiments of the present invention, the Recommendation Engine may comprise, and utilize as part of generating two or more individual content recommendation sets for each of the members in the user group, any content recommendation, content matching, or content analysis engine known today or to be devised in the future, such as, but not limited to: statistical recommendation engine(s) (e.g. a collaborative filtering engine) and/or semantic recommendation engine(s) (e.g. an incremental taste engine).
According to some embodiments of the present invention, the Recommendation Selection Module may provide, along with the selected content recommendation result set, a per-user content match/confidence rates feedback, for content items in the result set. Members of the pertinent group of users may be accordingly presented, for example over a Group Recommendation Content Output Device, with data indicative of the direct match rate between content items recommended to their entire group and their own individual profile/characteristics, and the confidence of the system in that assessment.

In figure IE there is shown, in accordance with some embodiments of the present invention, an exemplary system for generating and providing content recommendations to match the tastes and preferences of a group of users, wherein the Recommendation Engine (10) is functionally associated with a Content Catalogs Prioritization Module (40) for offering content items from specific preferred catalogues such as, but not limited to: catalogues previously used for supplying content item recommendations for the same group initiator or group members, catalogues of third parties offering higher profit margins to recommending entities, catalogues more popular among other recommendation services. As part of generating two or more individual content recommendation sets for each of the members in the user group, the Recommendation Engine (10), in this example, utilizes an Incremental Taste Engine (110) and a Collaborative Filtering Engine (120).

The Recommendation Selection Module (30) in this example, provides to a Content Output Device(s) (50) of the group users - along with the selected content recommendation result set that may comprise the actual recommended content items, and/or identifiers, links, references or the like of/to the recommended content - a per-user content match/confidence rates feedback, for content items in the result set. Members of the pertinent group of users (100, 110, 120) are accordingly presented with data indicative of the direct match rate between content items recommended to their entire group and their own individual profile/characteristics, and the confidence of the system in that assessment.

According to some embodiments of the present invention, there may be provided a computerized recommendation system for generating and providing content recommendations to match the tastes and preferences of a group of users, wherein the
system includes: (1) a Profile Engine for generating two or more individual user profiles for each of the members in the user group; (2) a Profile Aggregation Module for adding and combining the individual user profiles into a merged group profile; and (3) a Recommendation Engine for generating a content recommendation set for the user group, at least partially based on the merged group profile.

[0045] According to some embodiments, the Profile Aggregation Module, when adding and combining the individual user profiles into a merged group profile, may reference one or more functionally associated Users' Weights Storage databases. User profiles belonging to users having a higher weight (e.g. group initiators) may receive higher effect and thus be more dominant in the Merged Group Profile for which the content recommendation result set is generated, whereas user profiles belonging to users having a lower weight (e.g. parents in parent-kids groups) may receive lower effect and thus be less dominant in the Merged Group Profile for which the content recommendation result set is generated.

[0046] In figure 2A there is shown, in accordance with some embodiments of the present invention, an exemplary system for generating and providing content recommendations to match the tastes and preferences of a group of users, comprising: a Profile Engine (60) for generating two or more individual user profiles for each of the members in the user group; a Profile Aggregation Module (70) for adding and combining the individual user profiles into a merged group profile; and a Recommendation Engine (10) for generating a content recommendation set for the user group, at least partially based on the merged group profile.

[0047] The Profile Aggregation Module (70), when adding and combining the individual user profiles into a merged group profile, references a functionally associated Users' Weights Storage (230) database. User profiles belonging to users having a higher weight (e.g. group initiators) may receive higher effect and thus be more dominant in the merged group profile for which the content recommendation result set is generated, whereas user profiles belonging to users having a lower weight (e.g. parents in parent-kids groups) may receive lower effect and thus be less dominant in the merged group profile for which the content recommendation result set is generated.
[0048] In figure 2B there is shown, in accordance with some embodiments of the present invention, a flowchart of the main steps executed by an exemplary computerized system for generating and providing content recommendations to match the tastes and preferences of a group of users. The method exemplified comprises the following steps: Receiving a recommendation request, for a group of users, from the user initiating the group (2000); Building an individual user profile for each group user, based on his available (e.g. stored, accessed, received) inputs (2100); Merging the 'individual user profiles' into a merged group profile (2200); and Selecting a result set of recommendations for (i.e. based-upon/intended-for) the merged group profile, as the user group recommendations result (2300).

[0049] In figure 2C there is shown, in accordance with some embodiments of the present invention, a flowchart of the main steps and decisions executed by a simplified exemplary system for generating and providing content recommendations to match the tastes and preferences of a group of users. In this example, a recommendation request for a group of 2 users, User A and User B, is received (2500). For each user, based on his inputs, the Profile Engine builds an individual user profile: User A taste profile includes 2 tastes: A1: Twists and Turns, Mind Bending, Uncover Truth; A2: Special Effects, Stylized, Master Villain; User A is the group recommendation request initiator. User B taste profile includes 1 taste: B1: non-linear, mind bending; User B has already watched the movie 'Iron Man' (2600).

[0050] The Profile Aggregation Module then builds a merged group profile including the following tastes: Twists and Turns, Mind Bending, Uncover Truth, Special Effects, Stylized, Master Villain, Non-linear (2700). The Recommendation Selection Module then selects a set of recommendations for (i.e. based-upon/intended-for) the merged group profile including: Mind-Hunters (2004), Batman Returns (1992); as the user group recommendation result set (2800).

[0051] According to some embodiments of the present invention, there may be provided a computerized recommendation system for generating and providing content recommendations to match the tastes and preferences of a group of users, wherein the system includes: (1) a Profile Engine for generating a single joint users' taste profile which is generated based on user inputs from two or more members of the user group (i.e.
inputs from multiple users are treated as inputs from a single virtual user and the generated profile is designed to match the virtual user's inputs-based taste/preferences); (2) a Recommendation Engine for generating a joint profile content recommendation set for the user group, at least partially based on the joint users' taste profile; and (3) a Recommendation Selection Module for selecting at least a subset of the content items in the joint profile content recommendation set for inclusion in a content recommendation result set and providing it to the pertinent group of users.

[0052] According to some embodiments, the Profile Engine, when generating a single joint users' taste profile which is generated based on user inputs from two or more members of the user group, may reference one or more functionally associated Users' Weights Storage databases. User inputs belonging to users having a higher weight (e.g. group initiators) may receive higher effect and thus have more influence on the resulting joint users' taste profile, whereas user inputs belonging to users having a lower weight (e.g. parents in parent-kids groups) may receive lower effect and thus have less influence on the resulting joint users' taste profile.

[0053] In figure 3A there is shown, in accordance with some embodiments of the present invention, an exemplary system for generating and providing content recommendations to match the tastes and preferences of a group of users, comprising: a Profile Engine (60) for generating a single 'joint users' taste profile' which is generated based on user inputs from two or more members of the user group (i.e. inputs from multiple users are treated as inputs from a single virtual user and the generated profile is designed to match the virtual user's inputs-based taste/preferences); a Recommendation Engine (10) for generating, from content items in a Content Storage (220), a joint profile content recommendation set for the user group, based on the joint users' taste profile; and a Recommendation Selection Module (30) for selecting at least a subset of the content items in the joint profile content recommendation set for inclusion in a content recommendation result set and providing it to the pertinent group of users.

[0054] The Profile Engine (60), when generating a single joint users' taste profile which is generated based on user inputs from two or more members of the user group, references a functionally associated Users' Weights Storage (230) database. User inputs belonging to users having a higher weight (e.g. group initiators) may receive higher effect
and thus have more influence on the resulting joint users' taste profile, whereas user inputs belonging to users having a lower weight (e.g. parents in parent-kids groups) may receive lower effect and thus have less influence on the resulting joint users' taste profile.

[0055] In figure 3B there is shown, in accordance with some embodiments of the present invention, a flowchart of the main steps executed by an exemplary computerized system for generating and providing content recommendations to match the tastes and preferences of a group of users. The method exemplified comprises the following steps: Receiving a recommendation request, for a group of users, from the user initiating the group (3000); Building a 'joint users' tastes profile' for the entire user group, based on available (e.g. stored, accessed, received) inputs form all group users, while considering users' weights such that inputs of users having higher weights have greater influence on the resulting joint profile (3100); Selecting a 'joint profile recommendation set' for (i.e. based-on/intended-for) the 'joint users' tastes profile' (3200); and Selecting a subset of content items from the 'joint profile recommendation set' as a result recommendation set (3300).

[0056] In figure 3C there is shown, in accordance with some embodiments of the present invention, a flowchart of the main steps and decisions executed by a simplified exemplary system for generating and providing content recommendations to match the tastes and preferences of a group of users. In this example, a recommendation request for a group of 2 users, User A and User B, is received (3500).

[0057] Based on the user inputs of all users in the user group, the Profile Engine builds a: User AB Profile, in which tastes of users having a higher weight (i.e. User A – the group initiator – in this example) have a higher representation. The 'joint users taste profile' in this example includes: Taste1: Mind Bending, Twists and Turns, non-linear, Uncover Truth; Taste2: Special Effects, Stylized, Master Villain (3600).

[0059] According to some embodiments of the present invention, a system for generating and providing content recommendations to match the tastes and preferences of a group of users may comprise: digital processing circuitry and digital memory including digital processor executable code adapted to provide: a Recommendation Engine for generating two or more individual content recommendation sets for each of the members in the user group; a Recommendation Aggregation Module for adding and combining the individual content recommendation sets into an aggregated recommendation set; and a Recommendation Selection Module for selecting at least a subset of the content items in the aggregated recommendation set for inclusion in a content recommendation result set.

[0060] According to some embodiments, the Recommendation Selection Module of the system may further comprise one or more of the following: a Per Item User Counter for recording and counting the number of users to which a given content item was recommended; an Item-User Relevancy Level Calculator for estimating how relevant is a given content item to at least some of the members in the user group; a Previous Items Similarity Calculator for referencing a Previous Recommendations Log database and estimating the similarity level of a given content item to content items selected for the same, and/or a partially overlapping, group(s) in previous rounds of selection; a Direct User Input Analyzer for processing and considering explicit and/or implicit inputs, of members in the user group, relating to a given content item; and a Community Ratings Analyzer for referencing a proprietary and/or third party Community Ratings Storage database and giving a higher preference for inclusion in the content recommendation result set to content items having higher popularity in the community.

[0061] According to some embodiments, the Recommendation Selection Module of the system may further be adapted to provide the selected content recommendation result set with a per-user content match and confidence rates feedback for content items in the selected result set. According to some embodiments, the Recommendation Engine of the system may further be adapted to utilize a Content Catalogs Prioritization Module for offering content items from specific preferred catalogues.

[0062] According to other embodiments of the present invention, a system for generating and providing content recommendations to match the tastes and preferences of a group of users may comprise: digital processing circuitry and digital memory including digital
processor executable code adapted to provide: a Profile Engine for generating user taste profiles; and a Recommendation Engine for generating content recommendations based on the generated profiles.

[0063] According to further embodiments, the system may further comprise a Profile Aggregation Module for generating an individual profile for each member in the group of users. The Profile Aggregation Module may add and combine the individual user profiles into a merged group profile, and the Recommendation Engine may generate a content recommendation set for the user group based on the merged group profile.

[0064] According to other further embodiments, the system may further comprise a Recommendation Selection Module for generating a single joint users' taste profile based on inputs from multiple members of the group of users. The Recommendation Engine may generate a content recommendation set for the user group based on the joint users' taste profile, and the Recommendation Selection Module may select at least a subset of the content items in the joint profile content recommendation set for inclusion in a content recommendation result set.

[0065] According to some embodiments of the present invention, a method for generating and providing content recommendations to match the tastes and preferences of a group of users may comprise: generating two or more individual content recommendation sets for each of the members in the user group; adding and combining the individual content recommendation sets into an aggregated recommendation set; and selecting at least a subset of the content items in the aggregated recommendation set for inclusion in a content recommendation result set.

[0066] According to some embodiments, selecting at least a subset of the content items may further comprise one or more of the following: recording and counting the number of users to which a given content item was recommended; estimating how relevant is a given content item to at least some of the members in the user group; referencing a Previous Recommendations Log database and estimating the similarity level of a given content item to content items selected for the same group in previous rounds of selection; processing and considering explicit and/or implicit inputs of members in the user group relating to a given content item; and/or referencing a Community Ratings Storage
database and giving a higher preference for inclusion in the content recommendation result set to content items having higher popularity in the community.

[0067] According to some embodiments, the method may further comprise: providing the selected content recommendation result set with a per-user content match and confidence rates feedback; and/or offering content items from specific preferred catalogues.

[0068] According to some embodiments of the present invention, a method for generating and providing content recommendations to match the tastes and preferences of a group of users may comprise generating user taste profiles; and generating content recommendations based on the generated profiles.

[0069] According to some embodiments, the method may further comprise generating an individual profile for each member in the group of users and adding; combining the individual user profiles into a merged group profile; and generating content recommendations based on the merged group profile.

[0070] According to some embodiments, the method may further comprise generating a single joint users' taste profile based on inputs from multiple members of the group of users; generating content recommendations based on the joint users' taste profile; and selecting at least a subset of the content items in the joint profile content recommendation set for inclusion in a content recommendation result set.

[0071] The subject matter described above is provided by way of illustration only and should not be constructed as limiting. While certain features of the invention have been illustrated and described herein, many modifications, substitutions, changes, and equivalents will now occur to those skilled in the art. It is, therefore, to be understood that the appended claims are intended to cover all such modifications and changes as fall within the true spirit of the invention.
CLAIMS

1. A system for generating and providing content recommendations to match the tastes and preferences of a group of users comprising:
   digital processing circuitry; and
digital memory including digital processor executable code adapted to provide:
   a Recommendation Engine for generating two or more individual content recommendation sets for each of the members in the user group;
a Recommendation Aggregation Module for adding and combining the individual content recommendation sets into an aggregated recommendation set; and
   a Recommendation Selection Module for selecting at least a subset of the content items in the aggregated recommendation set for inclusion in a content recommendation result set.

2. The system according to claim 1 wherein said Recommendation Selection Module further comprises a Per Item User Counter for recording and counting the number of users to which a given content item was recommended.

3. The system according to claim 1 wherein said Recommendation Selection Module further comprises an Item-User Relevancy Level Calculator for estimating how relevant is a given content item to at least some of the members in the user group.

4. The system according to claim 1 wherein said Recommendation Selection Module further comprises a Previous Items Similarity Calculator for referencing a Previous Recommendations Log database and estimating the similarity level of a given content item to content items selected for the same, and/or a partially overlapping, group(s) in previous rounds of selection.

5. The system according to claim 1 wherein said Recommendation Selection Module further comprises a Direct User Input Analyzer for processing and considering explicit and/or implicit inputs, of members in the user group, relating to a given content item.
6. The system according to claim 1 wherein said Recommendation Selection Module further comprises a Community Ratings Analyzer for referencing a proprietary and/or third party Community Ratings Storage database and giving a higher preference for inclusion in the content recommendation result set to content items having higher popularity in the community.

7. The system according to claim 1 wherein said Recommendation Selection Module is further adapted to provide the selected content recommendation result set with a per-user content match and confidence rates feedback for content items in the selected result set.

8. The system according to claim 1 wherein said Recommendation Engine is functionally associated with a Content Catalogs Prioritization Module for offering content items from specific preferred catalogues.

9. A system for generating and providing content recommendations to match the tastes and preferences of a group of users comprising:
   digital processing circuitry; and
   digital memory including digital processor executable code adapted to provide:
   a Profile Engine for generating user taste profiles; and
   a Recommendation Engine for generating content recommendations based on the generated profiles.

10. The system according to claim 9 further comprising a Profile Aggregation Module, wherein:
    said Profile Engine generates an individual profile for each member in the group of users;
    said Profile Aggregation Module adds and combines the individual user profiles into a merged group profile; and
    said Recommendation Engine generates a content recommendation set for the user group based on the merged group profile.
11. The system according to claim 9 further comprising a Recommendation Selection Module, wherein:

- said Profile Engine generates a single joint users' taste profile based on inputs from multiple members of the group of users;
- said Recommendation Engine generates a content recommendation set for the user group based on the joint users' taste profile; and
- said Recommendation Selection Module selects at least a subset of the content items in the joint profile content recommendation set for inclusion in a content recommendation result set.

12. A method for generating and providing content recommendations to match the tastes and preferences of a group of users comprising:

- generating two or more individual content recommendation sets for each of the members in the user group;
- adding and combining the individual content recommendation sets into an aggregated recommendation set; and
- selecting at least a subset of the content items in the aggregated recommendation set for inclusion in a content recommendation result set.

13. The method according to claim 12 wherein selecting at least a subset of the content items further comprises recording and counting the number of users to which a given content item was recommended.

14. The method according to claim 12 wherein selecting at least a subset of the content items further comprises estimating how relevant is a given content item to at least some of the members in the user group.

15. The method according to claim 12 wherein selecting at least a subset of the content items further comprises:
referencing a Previous Recommendations Log database; and estimating the similarity level of a given content item to content items selected for the same group in previous rounds of selection.

16. The method according to claim 12 wherein selecting at least a subset of the content items further comprises processing and considering explicit and/or implicit inputs of members in the user group relating to a given content item.

17. The method according to claim 12 wherein selecting at least a subset of the content items further comprises referencing a Community Ratings Storage database and giving a higher preference for inclusion in the content recommendation result set to content items having higher popularity in the community.

18. The method according to claim 12 wherein selecting at least a subset of the content items in the aggregated recommendation set further comprises providing the selected content recommendation result set with a per-user content match and confidence rates feedback.

19. The method according to claim 12 wherein generating two or more individual content recommendation sets for each of the members in the user group further comprises offering content items from specific preferred catalogues.

20. A method for generating and providing content recommendations to match the tastes and preferences of a group of users comprising:
   generating user taste profiles; and
   generating content recommendations based on the generated profiles.

21. The method according to claim 20, wherein:
   generating user taste profiles comprises generating an individual profile for each member in the group of users and adding and combining the individual user profiles into a merged group profile; and
generating content recommendations is based on the merged group profile.

22. The method according to claim 20 wherein:

- generating user taste profiles comprises generating a single joint users' taste profile based on inputs from multiple members of the group of users;
- generating content recommendations is based on the joint users' taste profile; and
- further comprising selecting at least a subset of the content items in the joint profile content recommendation set for inclusion in a content recommendation result set.
A recommendation request, for a group of users, from the user initiating the group is received (1000)

For each user, based on his inputs, the recommendation engine selects an individual set of recommendations, from a content DB (1100)

The recommendation aggregation module builds an aggregated recommendations set based on the ‘individual user recommendations sets’ (1200)

The recommendation selection module selects a subset of items as a result set, based on the aggregated set of recommendations and possibly additionally-collected per-user data/inputs (1300)

Fig. 1B
A recommendation request for a group of 2 users is received:
- User A taste profile includes 2 tastes:
  A1: Twists and Turns, Mind Bending, Uncover Truth;
  A2: Special Effects, Stylized, Master Villain;
- User A is the group recommendation request initiator
- User B taste profile includes 1 taste:
  B1: Non-linear, Mind bending;
User B has already watched the movie 'Iron Man'. (1500)

For each user, based on his inputs, the recommendation engine selects an
individual set of recommendations, from a content DB:
Murder (1954), Iron Man (2008), Batman Returns (1992);
User B recommendations: Mind-hunters (2004), The Others (2001), The-
Adjustment-Bureau (2011). (1600)

The recommendation aggregation module builds an aggregated
recommendations set based on the 'individual user recommendations sets'
aggregated set includes:
Mind Hunters (2004): User A: high confidence, User B: high confidence

The recommendation selection module selects a subset of items as a result set:

Fig. 1C
A recommendation request, for a group of users, from the user initiating the group is received (2000)

For each user, based on his inputs, the profile engine builds an individual user profile (2100)

The profile aggregation module merges the ‘individual user profiles’ into a merged group profile (2200)

The recommendation engine selects a result set of recommendations for the merged group profile, from a content DB (2300)
A recommendation request for a group of 2 users is received: User A and User B. (2500)

For each user, based on his inputs, the profile engine builds an individual user profile:
- **User A** taste profile includes 2 tastes:
  A1: Twists and Turns, Mind Bending, Uncover Truth;
  A2: Special Effects, Stylized, Master Villain;
  User A is the group recommendation request initiator
- **User B** taste profile includes 1 taste:
  B1: Non-linear, Mind bending;
  User B has already watched the movie 'Iron Man'. (2600)

The profile aggregation module builds a merged group profile:
Twists and Turns, Mind Bending, Uncover Truth, Special Effects, Stylized, Master Villain, Non-linear. (2700)

The recommendation selection module selects a set of recommendations for the merged group profile:

Fig. 2C
A recommendation request, for a group of users, from the user initiating the group is received (3000)

Based on inputs from all users and users' weights, the profile engine builds a joint users' taste profile (3100)

The recommendation engine selects a 'joint profile recommendation set' for the joint users' taste profile, from a content DB (3200)

The recommendation selection module selects a subset of items as a result 'group recommendations' set from the 'joint profile recommendation set' (3300)

Fig. 3B
A recommendation request for a group of 2 users is received: User A and User B. (3500)

Based on the user inputs of all users (i.e. all A and B user inputs in this example), the profile engine builds a joint user taste profile – AB taste profile, in which tastes/genes of users having a higher weight (i.e. User A – the group initiator – in this example) have a better/higher representation:

Taste1: Mind Bending, Twists and Turns, non-linear, Uncover Truth
Taste2: Special Effects, Stylized, Master Villain. (3600)

The recommendation engine selects a recommendation set for the joint profile:


The recommendation selection module selects all or a subset of the joint profile recommendation set:

Mind-Hunters (2004). (3800)
### INTERNATIONAL SEARCH REPORT

**International application No.**
PCT/IB2014/060521

**A. CLASSIFICATION OF SUBJECT MATTER**

<table>
<thead>
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**B. FIELDS SEARCHED**

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

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**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)**

- Orbit, Google Patents, Google, Google Scholar.

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

#### Category

- **A** US 2012/0036137 A1 (NAIUD et al) 09 February 2012 (09.02.2012), entire document
- **A** US 2002/0052873 A1 (DELGADO et al) 02 May 2002 (02.05.2002), entire document

#### Date of the actual completion of the international search

22 August 2014

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15 SEP 2014

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