

**METHODS AND SYSTEMS FOR DETERMINING SIMILARITY BETWEEN
NETWORK USER PROFILE DATA AND FACILITATING CO-LOCATION OF
NETWORK USERS**

FIELD OF THE INVENTION

This invention is directed to methods and systems for determining similarity between user profile data, for a network having a plurality of users, and to methods for facilitating co-location of network users. Embodiments of the invention relate in particular to social networking and mobile communication systems and more specifically to social connections and encounters used to search and find activity partners among like-minded individuals with similar interests.

BACKGROUND OF THE INVENTION

Systems and methods for accessing user profile data, and networking between user profile data sources are known. For example, social discovery applications (apps), online dating services, relationship services and mobile dating apps offer subscribers a platform to connect with other subscribers hoping to find and meet new friends or activity or dating partners. Previously considered online dating methods and relationship services require subscribers to register with their email ID and fill out a questionnaire or respond to a quiz. They may also require subscribers to create a unique user ID to identify themselves and these IDs are used in searching a list of subscribers that might potentially match their interests. These search results are generally derived using proprietary algorithms that use subscriber profile information, search parameters and responses to questionnaires and or quizzes.

Previous mobile apps offer friend finder and dating services using email ID, mobile number or even a social networking account for registering a user. They generally match subscriber profiles using profile information, responses to questionnaires or quizzes and location information of a subscriber.

The aforementioned services offer the convenience of a finding potential partners or friends in the virtual world using their computers or mobile devices. However they do not address one or more of the following issues of critical importance to online and especially mobile dating subscribers and subscribers wishing to
5 encounter new friends in real life.

Almost all dating or friend-finding services in their current form need their subscribers to fill in questionnaires or answer quizzes to use in their search algorithm and for other users to evaluate mutual interests. These questionnaires
10 are quite involving even if only filled in once, but few users have the time to read and absorb all the answers to evaluate mutual interests, let alone remember when browsing through numerous profiles.

Such questionnaires also require large amounts of complex computational
15 processing, and can therefore be a drain on resources, for example in low-margin server farms, or in mobile user devices having little battery life. The calculations can also be lengthy and produce unacceptable waiting times.

Further, as these quizzes are submitted in an initial application, once a user has
20 filled it in there is no allowance for changing the functionality of the algorithm (for that user), or for performing different analysis of the initial submission. Similarly, there is no later assessment made if the user's opinions change.

Almost all questionnaires are subjective in nature and hence self-promoting, and
25 therefore answers given are not objectively indicative. For example, for a question such as: Do you consider yourself friendly, outgoing, serious or moody? users are likely to choose an answer they think will be a good answer to succeed in their friend-finding endeavour and not out, rather than a more objective assessment of the true answer.

Users often submit photos to their profiles that show them in the best light and resort to photo manipulation tools or use outdated photos to make themselves look more appealing and attractive. Most photos show only the faces and are not good indicators of the whole person including height, weight, age and other intangibles. Dating services are unlikely to enforce a 'recent photos only' policy. Users are therefore commonly disappointed when they meet someone in person looking completely different from their profile photos.

After a series of communication subscribers normally setup a location and time to meet in person. Many meetings are disappointing if, for example, the attendees do not look like their photos or reflect their online personae. In addition, the pressure of meeting strangers for the first time is usually a stumbling block for many, and hence such meetings can be rare with previously considered systems and methods.

Furthermore, user profile data between the parties may not have been optimally matched in any case before the meeting, resulting in further potential disappointment. In addition, requiring a specific location and time to be set out for the meeting prevents the possibility of one party re-considering the meeting, unless they do not attend altogether.

The present invention aims to address these problems and provide improvements upon the known devices and methods.

STATEMENT OF INVENTION

Aspects and embodiments of the invention are set out in the accompanying claims.

In general terms, one embodiment of a first aspect of the invention can provide a method of determining similarity between user profile data, for a network having a

plurality of users, the method comprising:; on presentation of media presentation items from a set of media presentation items to a first user and to a second user of the network, recording respective user device inputs from the first and second users in response to each media presentation item; and comparing the first and second user response inputs for each media presentation item to determine a similarity measure for a first and second user profile data pair. The set of media presentation items may have been obtained beforehand. Alternatively, the method may comprise identification of media presentation items at a remote resource, and arranging or otherwise instructing for media presentation items from the remote resource to be presented to the users.

This allows a simple means of assessing the responses of two parties to a third stimulus, in order to assess similarity, without direct contact between the parties, or direct assessment of one user by the other (or of their profile data). The user responses should also be more objective, as the input from the user is a simple response to a media item, rather than to a complex question inviting subjective assessment by the user. This method also removes the need for an up-front questionnaire, and also for a lengthy set of initial questions or statements.

Preferably, on presentation of a media presentation item with a set of available responses, the step of recording comprises recording a user device input selecting one of the set of available responses.

For example, the response set may be a binary yes/no, like/dislike, interested/uninterested set, or a response set with three options. The user can therefore select an option rather than writing a long answer. The response set may also comprise ratings or rankings of the presentation item.

Suitably, the step of comparing comprises identifying a media presentation item for which the first and second user responses match. For example, if the set of available responses is positive/negative (e.g. yes/no), a match may be that both

- users choose positive or both choose negative. In this context, a "match" of user responses may include instances where the first and second user responses are identical; these are considered an "exact match". But there may be other instances where the "match" is more broadly defined. If users are given a range of options to rate or rank the media presentation item so that they may choose from – for example, "strong like", "like", "no preference", "dislike", "strong dislike" – the step of comparing may comprise identifying a media presentation item for which the first and second user responses correlate to a sufficient extent that they can be considered for all intents and purposes to be a "match", or at least a good match. For instance, if one user responds to a particular media presentation item with a "strong like", and another user responds to the same media presentation with a "like", a correlation may be identified that both users "like" that particular media presentation item, although one user likes it more than the other user. That may be sufficient to identify that the users are potentially compatible with one another, that they may be a potential match themselves. Or, this identified correlation may form part of an identification – along with their responses to other posters, for example – to an identification the users are a potential match.
- Preferably, the step of comparing comprises determining the similarity measure as a function of matches and/or non-matches of the responses of the first and second users to the set of media presentation items.

In an embodiment, the function is:

$$f(x) = \frac{(x_1 + x_2)}{(x_1 + x_2 + x_3)}$$

where

x1 is the number of matches (which may be or include the number of exact matches or may be or include the number of correlations), for the set of media presentation items for the first and second users, of a positive response;

5 x2 is the number of matches (which may be or include the number of exact matches or may be or include the number of correlations) of a negative response; and

x3 is the number of non-matches of response.

10 Further, where x1 or x2 is a count including identified correlations, further weighting can be applied to that in the calculation given that the correlation does not necessarily identify that the two users responded in precisely the same way to the same media presentation item; the weighting may account for slight differences in response, such as a "like" compared to "strong like".

15 Suitably, each media presentation item comprises one or more of: an image; a set of text characters; a video; and a piece of audio.

20 In an embodiment, the method further comprises the steps of, following a determination of the similarity measure for the first and second user profile data pair: on presentation of a further media presentation item to the first user and to the second user of the network, recording respective user device inputs from the first and second users in response to the further media presentation item; comparing the first and second user response inputs for the further media presentation item; and using the comparison to update the similarity measure.

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This allows dynamic assessment of similarity between user data sets, and an iterative algorithm for updating the similarity measure. Therefore additional programming or functionality can be added and a user's tastes and opinions will continue to be measured.

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Suitably, presentation of the media presentation items is effected during an interaction by the first user with a network of user profiles, and user profile data for users is accessible from user devices.

- 5 For example, the user profile data may be accessible by viewing the data, for example using a display device of a user device, displaying image or text from the user profile data.

- 10 Preferably, the user profile data for users comprises accessible user profiles, and the method comprises retrieving a media presentation item for presentation to the first user after accessing by the first user of N user profiles.

This avoids constant interruption of user interactions – N can be set to minimize distraction of the user from the user profiles.

- 15 Suitably, the method further comprises: determining a similarity measure for user profile data pairs between the first user and a plurality of other users; and where a user profile data pair with a given other user profile data set has a value for the similarity measure above a similarity threshold, selecting the given other user
20 profile data set for access by the given user.

- The system can be set to give a higher likelihood of selecting profiles for access or viewing where there is a higher similarity measure, score or value. A similar measure can be used to select which media presentation items are appropriate
25 for presentation to a user.

- One embodiment of a second aspect of the invention can provide a server system comprising: a memory; and a processor module, the system configured to: arrange for transmission of media presentation items from a set of media
30 presentation items to a plurality of user devices, for presentation to users of the network; on presentation of media presentation items from the set to a first user

and to a second user of the network, record in the memory respective user device inputs from the first and second users in response to each media presentation item; and by the processor module, compare the first and second user response inputs for each media presentation item to determine a similarity measure for a first and second user profile data pair. In one implementation where the media presentation items are stored at the server system, the server system is configured to transmit media presentation items from the set of media presentation items from a communications interface to the user devices.

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One embodiment of a third aspect of the invention can provide a method for a user device of facilitating a method of the above first aspect, the method comprising: presenting media presentation items from a set of media presentation items to the user; recording user device inputs from the user in response to each media presentation item; and transmitting the user response inputs to the server system, for comparison of the user response inputs for each media presentation item with user response inputs for a second network user, to determine a similarity measure for a user and second network user profile data pair.

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The media presentation items may alternatively be stored on the device, rather than the remote server system.

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More preferably, the method further comprises: during a network interaction between the user and an other user, presenting to the user a media presentation item for which a response input has been recorded for the user which matches a response input recorded for the other user.

Network interactions may include online meetings, "chats" using displayed text typed by users, audio conversations, email, instant messages and the like.

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Suitably, the method further comprises using a display device of the user device to present media presentation items. Preferably, the display device comprises a touch screen, the method further comprising, on recognition of a gesture implemented on the touch screen, changing a user profile item being presented
5 on the display device to a media presentation item. For example, the user may scroll through a set of items (profile items and media presentation items) by a gesture, such as a swipe.

One embodiment of a fourth aspect of the invention can provide a system for
10 determining similarity between user profile data, for a network having a plurality of users, comprising a server system according to the above third aspect, and a user device configured to implement the method of any of the embodiments relating to the fourth aspect of the invention.

15 One embodiment of a fifth aspect of the invention can provide a method of facilitating co-location of first and second users of a network, the method comprising: determining a similarity measure for user profile data between the first user and a plurality of other users of the network; where a user profile data pair between the first user profile data set and a second user profile data set has
20 a value for the similarity measure above a similarity threshold, selecting the second user profile data set for permitting access by the first user; recording, for the second user, geographical location data and time data relating to an activity for the second user, prior to the time of the activity; and following recordal of the location and time data for the second user activity, permitting access for the first
25 user to the location and time data for the second user activity.

This allows for an unspecified meeting time or place to be established, which may result in a potential meeting, without requiring an explicit time and place where the parties are expected to attend. Therefore much of the disappointment
30 and anxiety can be removed from the potential encounter. The time data

recorded may be a time period, or an indication of a time or time period, to achieve this.

5 Preferably, the method further comprises recording, for the second user, data relating to a series of activities for the second user, prior to the time of the activities. More preferably, for one or more of the activities, the location and time data are repeated for subsequent activities.

10 This allows a user to set up an entire diary of events and activities at which they may be present, in order to maximise meeting opportunities, while maintaining caution in case a fixed meeting is not required.

15 Suitably, the method further comprises: receiving a notification from a user device of the first or second user of a change of attendance state at the location of the second user activity; and transmitting the attendance notification to the second or first user.

20 This allows a user to notify any other users present that they have arrived at the location, so that other users present may attempt to initiate an encounter or meeting. This also provides the option of not informing other users, so that anonymity can be maintained.

25 Preferably, the method further comprises: receiving a notification from a user device of the first or second user of cancellation of attendance at the location of the second user activity; and transmitting the attendance notification to the second or first user.

30 This allows users to be aware when another user is no longer present at the location previously notified, thus making the meeting system more efficient for users. The attendance cancellation may be made automatic, for example by

using a location tracking feature (e.g. GPS) of a user's mobile device to determine when the device has left the location.

One embodiment of a sixth aspect of the invention can provide a computer
5 system for facilitating co-location of first and second users of a network, the
computer system comprising: a memory; a communication interface; and a
processor module, the processor module configured to: determine a similarity
measure for user profile data between the first user and a plurality of other users
of the network; where a user profile data pair between the first user profile data
10 set and a second user profile data set has a value for the similarity measure
above a similarity threshold, select the second user profile data set for permitting
access by the first user; record, for the second user, geographical location data
and time data relating to an activity for the second user, prior to the time of the
activity; and following recordal of the location and time data for the second user
15 activity, permit access for the first user to the location and time data for the
second user activity.

Further aspects of the invention comprise computer programs, computer program
applications, a computer program product or computer program code which,
20 when loaded into or run on a computer or processor, cause the computer or
processor to become a system, or to carry out methods, according to the aspects
described above. The user's device may be loaded with executable instructions,
most likely in the form of a computer program product such as an app
downloaded from an online store. The app could also be a web-based app that is
25 run within an internet browser such as Firefox, Chrome, Safari, etc.

Of course, other forms of computer program products are also envisaged,
including storage media such as "thumb drives", DVDs etc, having stored
thereon, executable instructions for loading onto a user's device.
The above aspects and embodiments may be combined to provide further
30 aspects and embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described by way of example with reference to the accompanying drawings, in which:

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Figure 1 is a diagram illustrating a system according to an embodiment of the invention;

Figure 2 is a screenshot illustrating a login screen according to an embodiment of the invention;

10 Figure 3 is a diagram illustrating a system according to an embodiment of the invention;

Figure 4 is a diagram illustrating steps of a method according to an embodiment of the invention;

15 Figure 5 is a diagram illustrating steps of another method according to an embodiment of the invention;

Figure 6 is a diagram illustrating a calculation of a method according to an embodiment of the invention;

Figures 7 to 12 are screenshots illustrating embodiments of the invention; and

20 Figure 13 is a diagram illustrating typical features of an interactive system according to an embodiment of the invention.

DETAILED DESCRIPTION OF EMBODIMENTS

Embodiments of the invention can provide a system that uses multimedia
25 presentation items or “posters” – a definition of which is given below – to ascertain the real world interests of subscribers
to connect like-minded individuals and hangspot places – a definition of which is given below – to create opportunities

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30 for subscribers to lookup or meet each other in the real world, and to check out each other in before they decide to formally meet or engage in a relationship.

Embodiments are directed towards a system that displays profiles of like-minded subscribers and facilitates instant communication between subscribers on personal devices such as mobile phones, tablets and similar communication devices.

Client apps provide the primary user interface to subscribers; core servers facilitate interconnection of client apps; multimedia posters identify real world interests of subscribers; hangspots enable users to look up people in real life; database servers store and manage subscriber data; file servers efficiently store, retrieve and manage frequently used files and images; a notifier process manages push notifications to client apps; and a set of methods as described herein offers a unique service to subscribers. As will become apparent from the following discussion, the techniques disclosed herein, particularly the techniques relating to the hangspot feature, may provide or facilitate an enhanced user experience. Users of the feature may find themselves in a position where they can say with some confidence "Now I know when and where I can check out interesting people".

In more detail, client apps downloaded onto personal devices such as smartphones, tablets or PC let subscribers; setup and manage profiles; browse the profiles of other subscribers who match their interests; express their real life interests by clicking buttons such as 'interesting' or 'not interesting' buttons on multimedia posters when presented to them; communicate with chosen subscribers anonymously using text, voice or video messages and calls; let the system know when and where they hang out in the real world; check in and out of hangspot places; get notified when their matches check into and out of their hangspot places; and use all the said features and more instantly without the need to create an account or fill any sort of questionnaire.

Multimedia posters may be considered as media presentation items. They may be full screen digital displays made of text, images, sound or video and are presented to subscribers from time to time to ascertain their real world interests.

These posters depict real world objects, places, events, people or things that subscribers come across in their real life and subscribers are prompted with buttons such as 'interesting' and 'not interesting' to respond to express themselves. The system deduces like-minded people by constantly learning their likes and dislikes and matching the similarities. The posters are good indicators of real world interests since posters depict real world things such as food, places, movies, music, people, events and other things that users come across every day in real life. In contrast, questionnaires and quizzes are subjective in nature and do not reflect reality.

Hangspots are places in the real world where users visit for a specific purpose such as shopping in a mall, dining at a restaurant, exercising in a gym, enjoying a live concert, visiting expos or museums, relaxing at a resort or just sipping drinks at a café. These are places normally conducive for casual encounters or checking out other people who visit the same place in an informal setting and not requiring to arrange a formal meeting. Users manage their hangspots by checking into and out of their hangspot locations or that of their connections, thereby creating opportunities to check each other out.

A core server facilitates client apps to; maintain a bi-directional network connection using standard internet protocols; automatically register a new subscriber; create and manage subscriber profile; receive multimedia posters to present to subscriber; update subscriber responses to multimedia posters; send messages to and receive messages from other subscribers; initiate anonymous voice or video calls; receive notifications about new messages, calls or connection requests; update periodically relevant metrics such as profile views; update subscriber settings such as Do-Not-Disturb (DND), blocking and reporting

users; and respond to clients when requested with a list of profiles that match a given subscriber's interests.

A publisher process facilitates the core server to create, update and delete
5 subscriber profiles and multimedia posters. Publisher uses the services of a File Server to efficiently store and distribute the said subscriber profiles and posters. The File Server facilitates client apps to download the required profile and poster files efficiently using industry standard content distribution networks.

10 The Notifier process sends push notifications to client Apps when new messages, call requests or connection requests are received on behalf of a subscriber whose client app is offline and currently not connected to the core server.

15 The Database Server facilitates core server to store subscriber data including profile information, subscriber status, device information, poster responses and other metrics and parameters. The Database Server provides a query interface and methods to extract data of interest to the core server and client apps.

20 A method to match real-world interests of subscribers assigns a match score for every pair of subscribers using their 'interesting' and 'not interesting' responses to multimedia posters that depict real world things and happenings. The profiles with higher match score get presented to a subscriber preferably ahead of profiles with lower match scores. This method ensures like-minded people get to
25 connect faster with minimal effort on part of a subscriber.

A method to select posters provides a list of posters to be presented to users based on time and profile information and ensures that all subscribers respond to an optimal set of posters for maximum match accuracy. For example, posters
30 may be selected as appropriate for a given user based on location, time and other profile information including and not limited to gender, age, race, religion,

lifestyle habits, and/or the capabilities of the user's device. The system may allow for posters /media presentation items to be sponsored by other parties such as commercial entities. For instance, the owner/manufacture of a particular soft drink may sponsor the presentation of a poster including an image of a bottle or can of that soft drink to users of the system. In this respect, media presentation items may be considered to be targeted advertisements, targeted at the user(s). And at the same time, these media presentation items fulfil the double purpose of allowing the system to acquire the users' responses to them, thereby determining whether or not users are potentially compatible with one another.

A method for sharing hangspot places with select users provides subscribers an interface to update their usual hangspot places and share it with other selected users or all of their connections. Users can check-in and checkout to notify their connections of their whereabouts creating an opportunity to check each other out. This method helps subscribers to look each other up in the real world before a formal meeting and helps them make meaningful decisions to pursue a relationship or not thus avoiding disappointments associated with meeting strangers, for example who may not resemble profile photos in person or resemble their online virtual persona.

Fig 1 is a block diagram of a system which can provide embodiments of the invention. Subscribers to the system will use one of a number of user devices to access the system, each able to communicate with the servers in some way. Numerals 101, 102 and 103 indicate processes that are executed on a subscriber's communication device such as a mobile phone (smartphone app 101) tablet computer (tablet app 102) or PC computer program or application (PC App 103) in the form of apps, which may be downloadable or loadable from a readable medium. The apps are responsible for; maintaining a two way internet connection with the core server (104); registering a new subscriber and updating subscriber profile as and when needed; retrieving subscriber profiles that match the given subscriber interests; fetch photos and details of matching profiles;

presenting profiles to the subscriber; fetching posters to be displayed at
opportune times to the subscriber; gathering subscriber responses to posters;
updating subscriber responses to posters to the server; facilitating instant
communication between subscribers; receiving and managing notifications from
5 the server; and periodically updating performance metrics and statistics to the
server.

The core server (104) stores and manages subscriber information in a database
(106); facilitates instant communication between client apps; and provides a list
10 of profiles to a client app that match a given subscriber's interests.

The File Server (105) process manages profiles and posters and distributes them
efficiently to millions of client apps worldwide using industry standard content
distribution networks (CDN) and caching technologies.

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The Database process (106) stores all information related to profiles, posters,
performance and operations and provides query interfaces to search for relevant
information. The Notifier process (107) sends notifications to the device about
new messages from server or other clients when the client app is not connected
20 to the server. The Publisher process (108) converts profile and poster information
into html pages that is readily consumable by the client apps storing it in a
database (109) and distributed using the File Server (105).

Fig 1 has so far illustrated the major processes of the proposed system in
25 general and the following describes specific embodiments in detail.

Figure 2 illustrates a typical screenshot of a login screen for an app, on a user
device. Basic details such as gender and age (201) are entered, along with a
target age group and gender (202) for meetings. A start button executes this part
30 of the application (203) and enters these details for the user, recording them on
the server. Figure 3 demonstrates that a user can have their profile data

associated (301) with more than one device – Device 1 and Device 2. These devices connect to the server in this case via an internet connection, accessed by a communication device of the device.

5 Figure 4 is a diagram illustrating steps of a method according to an embodiment. First, the set of media presentation items is obtained (402) for presentation, on user devices, to users of the network. The media presentation items, or posters, which may be any kind of multimedia presentable to a user by any sensory feedback, can be stored on the servers, or on the user device. For example, the
10 poster may include any or all of text, images, video or audio. If the items are stored on the user device, the user device's store of items will be updated from the server when necessary.

A poster or media presentation item from the set is presented to a first user (404)
15 and to a second user (406) of the network. This need not occur at the same instant, but the devices, and later the servers (storing data downloaded from the devices), will at some point be presented with the same poster.

The respective user device inputs from the first and second users in response to
20 the poster are recorded (408, 410). This can be done initially on the user device, or transmitted instantly to the server for storage. The system now has a record of the user response to the same poster for both users.

The response depends on the presentation of the media item to the users.
25 Advantageously, the media items can be presented with simple binary response options, such as yes/no, like/dislike or interested/uninterested. This allows for a far simpler comparison method, which in turn allows for less computational complexity and processing time. However, these simple responses, collected over time and over a large number and variety of differing media items seen by
30 the users, can give a highly accurate assessment of the opinions, character

traits, and the like of the users, which therefore allows a system which can confidently be used to refer users to each other according to such factors.

Other simple schemes, such as three or four possibility response, multiple choice, or a rating or ranking system (for example, 1 to 5) can similarly be used, as these are readily comparable to each other. This is in contrast to answers to questionnaires in previously considered systems, which if in text form have to be parsed and analysed, and even then can make comparison extremely complex.

- 10 The final step is comparing (412) the first and second user response inputs for each media presentation item to determine a similarity measure for a first and second user profile data pair. This step is typically executed at the server; essentially the system is looking for matching and non-matching responses to the media items. Matching responses can be collected and used to indicate
- 15 similarities between users, and therefore be used for association of profiles.

One example of the calculation is illustrated in Figure 6, a Venn diagram illustrating an example of results of responses to posters by users. A is a list of posters subscriber A responded to, and B a list that B responded to. X1 is the count of posters “liked” by both subscribers (or where there is a correlation, as described above), X2 the count “disliked” by both, and X3 the count of posters where the subscribers differed in their response. A match score is calculated using these factors, the match score being a function $f(\text{range}, X1, X2, X3)$. In this embodiment, the calculation is as follows:

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$$f(x) = \frac{(x1 + x2)}{(x1 + x2 + x3)}$$

The match score is calculated and the score is used to sort the profiles before presenting to the user. The match score will be calculated in a given range such

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as 0 to 100 and the system presents a user with a profile with a higher match score, before others with lower scores.

5 A decision can be taken over what range to limit the match score to, i.e. what threshold value the calculation must attain for the system to deem the profiles sufficiently similar to warrant associating them or presenting them to each other. Alternatively, the match score can simply be recorded, and a threshold set or reset at any time, for example by the user via the device. Or the match score can be recorded and used to weight the likelihood of a particular profile appearing to
10 a user, rather than simply ruling out profile pairs below a certain score.

Figure 7 illustrates a typical screenshot for a profile of a user viewed on another user's device. 701 is an icon for a profile menu and options, 703 is a button for accessing other pictures or photos of the user, 704 is a button which opens the
15 "chat" communication window, and 705 shows an alternative view in which profile information for the user is overlaid on the profile picture.

Figure 8 illustrates an example of a multimedia poster as shown on a user's device. A poster is typically an image or video 802, and users can see more
20 information associated with the image by clicking on a poster menu (901) or swiping the image to reveal detailed information (805) before the respond to the item. Information 805 can be any additional information required – for example, if the image is of a beach, the information page can list the location of the beach, and link to related travel sites.

25 The buttons 803 and 804 can be selected or clicked by the user to indicate their response to the poster. This information is collected as described above and passed to the servers for comparison and other processing.

30 Figure 9 illustrates how a user can browse through user profiles and posters as a single stream of images. The user device (920) initially loads a user profile 910.

The user can then swipe or use another gesture, such as a shake of the device, keystroke or mouse click, to load the next profile. After a number of profiles, N, the system loads a poster (930) as the next item viewed. The user is therefore prompted during usual browsing of profiles to enter a simple response to the poster, and then continue browsing. The multimedia posters are inserted into such single streams of profiles to offer a seamless browsing experience of both profiles and posters at the same time. The selection of the number N is made to optimize the chances that a user will not get dissatisfied with continual response prompts, but that the system will continually collect sufficient information to update the user's preferences.

In embodiments, the system continuously learns every user's likes and dislikes, by continually prompting users for responses to such posters. The continual assessment of user responses is used to update the user profile data of each user to record their responses, and in embodiments can be used to analyse the data to determine character traits. The system also continually assigns match scores for every pair of users, and updates these as users continue to respond to media items. The system is therefore dynamic and iterative, in contrast to previous systems in which all assessment of the user's tastes is done in an initial stage.

Figure 10 illustrates an example of a chat window accessible from user profiles (Figure 7), providing a typical instant messaging option. When clicked a chat window is shown to the user that shows the name of the user profile being viewed (1001), and the messages so far exchanged (1002). A message typing window is here shown at the bottom of the screen (1004). In contrast to previous systems, the system also displays posters in the background behind the chat window, to highlight how the users responded to posters. The full background screen 1005 is accessible by clicking a button or swiping, and the screen shows the indicators 1006 and 1007 of which user (indicated by the picture above) liked or disliked the poster. The user can swipe to see the next poster in the series.

The posters can be made to appear sequentially behind the chat window, for example by a scrolling or fade in/out motion. This allows the users to instantly see how their interests match, and facilitates topics of conversation.

- 5 Figure 5 illustrates steps of a method according to another embodiment of the invention, concerning “hangspots”. In this embodiment, first a check is made that the parties are already connected, or are compatible according to matching as in the embodiments above, or the like. The system first determines a similarity measure for user profile data between a first user and another network user
10 (502). If this does not exceed a threshold (504), the method goes back to the first step, to find another user profile data set which may match more closely.

- If the similarity measure is above the threshold, the first user is permitted access to the second user’s user profile data (506), which includes their hangspot data.
15 This data is generated by the (second) user by first recording location and time or time period data for a planned activity, before the activity is to take place (508). This can be a single activity, or more usually a series of activities. Users can upload an entire diary of their usual activities, such as going to work on a public transport vehicle between certain times on weekdays, going to a swimming pool
20 on Sunday mornings, and the like.

- Finally the first user is permitted access to the location and time data for the planned activity (510), so that they can arrange to be at one of the places at a time or during a time period, in order to initiate an encounter.
25

- Users can also control who can see their hangspots by setting an option to explicitly share it with a person, with everyone or with people who they have already initiated a conversation with.
30 Depending on the viewing permissions, other users are then notified of impending hangspots. Other users can respond (RSVP) to hangspot

notifications to indicate their interest in visiting the hangspot and possibly checking out the other person. That is, the other users may be prompted to indicate interest in the hangspot notification. When interest in a hangspot notification is received, one or more of the other users may also be notified of
5 that fact. The RSVP concept may create expectation; check-in may create excitement and checkout may offer a closure. It is believed that the combination of RSVP/check-in/checkout has not hitherto been available.

10 In previous systems, notification of a list or diary of a person's activities is not available in advance, so other users do not have an opportunity to join in. In others, there is no means of identifying persons attending who may be people interested in meeting a person like you; this is facilitated in embodiments of the invention by the matching score.

15 One objective of the invention is to enable social encounters in real life at places where people normally hangspot in such places as coffee shop, yoga classes, gym, parks, expos, resorts, cinema, restaurants etc. The methods as described above help users target users they share mutual interests in real world things, chat with them instantly and establish a person rapport to some extent. However
20 the relationships truly begin only when they meet in real life. However, when left to individuals to arrange a meeting by themselves they can end in disappointment since online personae of most users are different from their real life personae, including their resemblance to online photos. Embodiments of the invention address this issue of by facilitating social encounters in real life,
25 wherein such encounters are informal in nature in a public place without any pressure to even meet or greet the other person. Most encounters could just be a casual lookup of other people, checking out who they really are in person and studying how they look and act in the real world. Such encounters are very valuable to every user in deciding whether they like to initiate a relationship
30 with other person.

Unlike chance encounters we stumble upon in real life such as a fellow passenger in a train or a flight, encounters enabled by the system are not random but by design among people who share similar real world interests and have mutually matching criteria to meet one another. Also photos, profile information and prior chatting make other users familiar and not total strangers when looking them up in real life.

Every user adds hangspot places to the system ahead of time indicating location and time as illustrated in Figure 11. A location could be any place on a map such as a public park (1101) or a coffee shop (1102). The time or period when a user expects to hang out at the given location can be expressed in different ways that include but are not limited to specific date and time, days of week and time and duration with start and end date. These hangspots are shared with other users as controlled by the user by choosing to share (1104) with everyone matching their target criteria, who they communicate with, or specific persons explicitly.

As illustrated in Figure 12, every time a user reaches a hangspot place, either their own or others', they can toggle an attendance button, which for example sends a notification to the server, to "check in" into the hangspot place (1201) . Other users are notified of the attendance, for example via a communication from the server, to serve as an announcement of the user's arrival (1203). When two users check in to the same place at the same time, a social encounter is made possible, and all this is made feasible by sharing hangspot data ahead of time, prior to the actual activity taking place.

Similar to check-in, the opposite toggle of the attendance button, check out serves as an announcement that a user is not available at a given hangspot place anymore. Check in and check out features replace all the traditional pressures of setting up formal meetings and the anxiety associated with meeting strangers.

The check out function can also be activated automatically, for example by a location function of a user's device. In an example, a user may leave a geographical location, and a GPS function on the user's mobile device, linked to the software application for the hangspot, can alert the software that the user has
5 left the location, toggling the check out. The check in function can also be set to automatically sign a person into a location in this way.

Referring to Figure 13, certain of the above embodiments of the invention may be conveniently realized as a computer system (such as a server or mobile device)
10 suitably programmed with instructions for carrying out the steps of the methods according to the invention.

For example, a central processing unit 1304 is able to implement such steps as obtaining a set of media presentation items for presentation, on user devices, to
15 users of the network; on presentation of media presentation items from the set to a first user and to a second user of the network, recording respective user device inputs from the first and second users in response to each media presentation item; and comparing the first and second user response inputs for each media presentation item to determine a similarity measure for a first and second user
20 profile data pair.

Data can be received by port 1305 which could be a reader for portable data storage media (e.g. CD-ROM); a direct link with apparatus or a connection to a network.
25

Software applications loaded on memory 1306 are executed to process the data in random access memory 1307.

A Man – Machine interface 1308 typically includes a keyboard/mouse/screen
30 combination (which allows user input such as initiation of applications) and a screen on which the results of executing the applications are displayed.

It will be appreciated by those skilled in the art that the invention has been described by way of example only, and that a variety of alternative approaches may be adopted without departing from the scope of the invention, as defined by the appended claims.

CLAIMS

1. A method of determining similarity between user profile data, for a network having a plurality of users, the method comprising:

5

on presentation of media presentation items from a set of media presentation items to a first user and to a second user of the network, recording respective user device inputs from the first and second users in response to each media presentation item; and

10

comparing the first and second user response inputs for each media presentation item to determine a similarity measure for a first and second user profile data pair.

2. A method according to Claim 1, wherein, on presentation of a media presentation item with a set of available responses, the step of recording comprises recording a user device input selecting one of the set of available responses.

15

3. A method according to Claim 1 or Claim 2, wherein the step of comparing comprises identifying a media presentation item for which the first and second user responses match.

20

4. A method according to any preceding claim, wherein the step of comparing comprises determining the similarity measure as a function of matches and/or non-matches of the responses of the first and second users to the set of media presentation items.

25

5. A method according to Claim 4, wherein the function is:

$$f(x) = \frac{(x1 + x2)}{(x1 + x2 + x3)}$$

5

where

x1 is the number of matches, for the set of media presentation items for the first and second users, of a positive response;

x2 is the number of matches of a negative response; and

10

x3 is the number of non-matches of response.

6. A method according to any preceding claim, wherein each media presentation item comprises one or more of: an image; a set of text characters; a video; and a piece of audio.

15

7. A method according to any preceding claim, further comprising the steps of, following a determination of the similarity measure for the first and second user profile data pair:

20

on presentation of a further media presentation item to the first user and to the second user of the network, recording respective user device inputs from the first and second users in response to the further media presentation item;

comparing the first and second user response inputs for the further media presentation item; and

25

using the comparison to update the similarity measure.

8. A method according to any preceding claim, wherein presentation of the media presentation items is effected during an interaction by the first user with a network of user profiles, and wherein user profile data for users is accessible from user devices.

30

9. A method according to Claim 8, wherein the user profile data for users comprises accessible user profiles, and wherein the method comprises retrieving a media presentation item for presentation to the first user after accessing by the first user of N user profiles.

5

10. A method according to Claim 8 or Claim 9, further comprising:
determining a similarity measure for user profile data pairs between the first user and a plurality of other users; and
where a user profile data pair with a given other user profile data set has a value for the similarity measure above a similarity threshold,
selecting the given other user profile data set for access by the given user.

10

11. A server system comprising:
a memory;

15

and

a processor module,
the system configured to:

arrange for transmission of media presentation items from a set of media presentation items to a plurality of user devices, for presentation to users of the network;

20

on presentation of media presentation items from the set to a first user and to a second user of the network, record in the memory respective user device inputs from the first and second users in response to each media presentation item; and

25

by the processor module, compare the first and second user response inputs for each media presentation item to determine a similarity measure for a first and second user profile data pair.

12. A method for a user device of facilitating a method of Claim 1, the method comprising:

30

presenting media presentation items from a set of media presentation items to the user;

recording user device inputs from the user in response to each media presentation item; and

5 transmitting the user response inputs to the server system, for comparison of the user response inputs for each media presentation item with user response inputs for a second network user, to determine a similarity measure for a user and second network user profile data pair.

10 13. A method according to Claim 12, further comprising:
during a network interaction between the user and an other user, presenting to the user a media presentation item for which a response input has been recorded for the user which matches a response input recorded for the other user.

15 14. A method according to Claim 12 or Claim 13, further comprising using a display device of the user device to present media presentation items.

20 15. A method according to Claim 14, wherein the display device comprises a touch screen, the method further comprising, on recognition of a gesture implemented on the touch screen, changing a user profile item being presented on the display device to a media presentation item.

25 16. A system for determining similarity between user profile data, for a network having a plurality of users, comprising a server system according to Claim 11, and a user device configured to implement the method of any of the Claims 12 to 15.

30 17. A method of facilitating co-location of first and second users of a network, the method comprising:

determining a similarity measure for user profile data between the first user and a plurality of other users of the network;

5 where a user profile data pair between the first user profile data set and a second user profile data set has a value for the similarity measure above a similarity threshold, selecting the second user profile data set for permitting access by the first user;

recording, for the second user, geographical location data and time data relating to an activity for the second user, prior to the time of the activity; and

10 following recordal of the location and time data for the second user activity, permitting access for the first user to the location and time data for the second user activity.

15 18. A method according to Claim 17, further comprising recording, for the second user, data relating to a series of activities for the second user, prior to the time of the activities.

20 19. A method according to Claim 18, wherein for one or more of the activities, the location and time data are repeated for subsequent activities.

25 20. A method according to any of the Claims 17 to 19, further comprising:
receiving a notification from a user device of the first or second user of a change of attendance state at the location of the second user activity; and
transmitting the attendance notification to the second or first user.

21. A method according to Claim 20, further comprising:

receiving a notification from a user device of the first or second user
of cancellation of attendance at the location of the second user activity;
and
transmitting the attendance notification to the second or first user.

5

22. A method according to any of the Claims 17 to 21, further
comprising prompting the first user to indicate interest in the hangspot
notification.

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23. A computer program application or product comprising computer
program code adapted, when loaded into or run on a computer or
processor, to cause the computer or processor to become a system, or to
carry out a method, according to any preceding claim.

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