A method, apparatus, and computer program product are provided for providing user identity management in social services. An apparatus may include a processor configured to monitor a first user’s behavior on a social service. The processor may be further configured to generate a first user behavior model representative of the first user’s behavior over a period of time on the social service based at least in part upon the first user’s monitored behavior. The processor may additionally be configured to provide the first user guidance about the first user’s behavior based at least in part upon the first user behavior model. Corresponding methods and computer program products are also provided.
FIG. 2.
FIG. 3.
Comparing a user behavior model for a user to the user's recent behavior and/or to another behavior model

Providing guidance based at least in part upon the comparison if a deviation in the user's behavior is detected by causing a user interface element to be displayed to the user on a display of the user device

User acknowledges receipt of guidance (optional)

Altering the user interface for social service based at least in part upon the provided guidance and/or user acknowledgement (optional)

FIG. 5.
METHODS, APPARATUSES, AND COMPUTER PROGRAM PRODUCTS IN SOCIAL SERVICES

TECHNOLOGICAL FIELD

Embodyments of the present invention relate generally to communication technology and, more particularly, relate to methods, apparatuses, and computer program products in social services.

BACKGROUND

The modern communications era has brought about a tremendous expansion of wireline and wireless networks. Computer networks, television networks, and telephony networks are experiencing an unprecedented technological expansion, fueled by consumer demand. Wireless and mobile networking technologies have addressed related consumer demands, while providing more flexibility and immediacy of information transfer.

Current and future networking technologies as well as evolved computing devices making use of networking technologies continue to facilitate ease of information transfer and convenience to users. In particular, this evolution in computing devices and networking technologies has lead to the development and widespread use of social services. Social services are online services that are accessed and used by a community of users who socially interact with each other through use of the social service. Example social services include social networking services, online multiplayer game services, and community message forums and discussion groups.

A user of a social service may interact with other users of the social service using a virtual world identity that may approximate the user's real world identity or may be an alternative identity differing to some degree from the user's real world identity. The user's virtual world behavior is formed through the aggregate behavior of the user on the social service. Other users of the social service may form a perception of the user based at least in part upon the user's virtual world identity.

In an optimum scenario, a user's virtual world identity and thus the perception that other users of a social service have of the user is in line with the virtual world identity that the user intends to project. However, often users project a virtual world identity differing to at least some extent from the desired virtual world identity. Unfortunately, with existing services, it is difficult for a user to discern his own virtual world identity, much less, to discern the perception that other users have of his virtual world identity as existing services do not provide a means to externalize a user's virtual world identity so that the user may understand the effects of his behavior on a social service.

Further, given the prevalence of social services today, many users utilize multiple social services and may, either intentionally or unintentionally, project a different virtual world identity in each social service. Keeping track of the different virtual world identities presented by a user in each of the social services in which the user participates so that a user may present a consistent virtual world identity within each social service or even across multiple social services is difficult since services do not or do not provide a means to externalize a user's virtual world identity so that the user may understand the effects of his behavior on a social service.

Accordingly, it would be advantageous to provide methods, apparatuses, and computer program products for providing user identity management in social services.

BRIEF SUMMARY OF SOME EXAMPLES OF THE INVENTION

A method, apparatus, and computer program product are therefore provided for providing user identity management in social services. In this regard, a method, apparatus, and computer program product are provided that may provide several advantages to a user of a social service. Embodiments of the invention model behavior of one or more users of a social service. At least some embodiments provide for externalization of user behavior such that a user may review his virtual world identity and how other users of the social service perceive him. In this regard, embodiments of the invention provide social service users the ability to keeping track of a virtual world identity presented by the user so that a user may present a consistent virtual world identity within a social service. Embodiments of the invention further provide advice to a user on how to behave in a social service so that the user may conform his behavior to the community behavioral norm for the social service.

In a first exemplary embodiment, a method is provided, which may include monitoring a first user's behavior on a social service. The method may further include generating a first user behavior model representative of the first user's behavior over a period of time on the social service based at least in part upon the first user's monitored behavior. The method may additionally include providing the first user guidance about the first user's behavior based at least in part upon the first user behavior model.

In at least some embodiments, monitoring a first user's behavior comprises monitoring at least one of content of a user profile for the first user on the social service, the first user's interaction with other users of the social service, content of messages exchanged between the first user and other users of the social service, content of postings made by the first user to a bulletin board on the social service, content of postings to a bulletin board on the social service read by the first user, content of data uploaded to the social service by the first user, content of data accessed by the first user while using the social service, or activities engaged in by the first user on the social service.

In at least some embodiments, providing the first user guidance about the first user's behavior comprises providing the first user guidance when the first user's behavior risks disclosing an identity of the first user.

In one embodiment, the method further comprises monitoring a second user's behavior on the social service. The method additionally comprises generating a second user behavior model representative of the second user's behavior on the social service based at least in part upon the second user's monitored behavior. The method also comprises generating a bot configured to simulate the second user based at least in part upon the second user behavior model. The method further comprises providing the first user a simulated interaction with the second user using the bot.

In one embodiment, the method further comprises mining information provided to the social service by a second user of the social service to identify information provided about the first user. The method also comprises determining whether any of the information provided about the first user is false based at least in part upon the first user behavior model.
The method additionally comprises notifying the first user of the presence of false information about the first user on the social service.

[0014] In another exemplary embodiment, a computer program product is provided. The computer program product includes at least one computer-readable storage medium having computer-readable program instructions stored therein. The computer-readable program instructions may include a plurality of program instructions. Although in this summary, the program instructions are ordered, it will be appreciated that this summary is provided merely for purposes of example and the ordering is merely to facilitate summarizing the computer program product. The example ordering in no way limits the implementation of the associated computer program instructions. The first program instruction is for monitoring a first user's behavior on a social service. The second program instruction is for generating a first user behavior model representative of the first user's behavior over a period of time on the social service based at least in part upon the first user's monitored behavior. The third program instruction is for providing the first user guidance about the first user's behavior based at least in part upon the first user behavior model.

[0015] In another exemplary embodiment, an apparatus is provided, which may include a processor configured to monitor a first user's behavior on a social service. The processor may be further configured to generate a first user behavior model representative of the first user's behavior over a period of time on the social service based at least in part upon the first user's monitored behavior. The processor may additionally be configured to provide the first user guidance about the first user's behavior based at least in part upon the first user behavior model.

[0016] In another exemplary embodiment, an apparatus is provided, which may include means for monitoring a first user's behavior on a social service. The apparatus may additionally include means for generating a first user behavior model representative of the first user's behavior over a period of time on the social service based at least in part upon the first user's monitored behavior. The apparatus may further include means for providing the first user guidance about the first user's behavior based at least in part upon the first user behavior model.

[0017] The above summary is provided merely for purposes of summarizing some example embodiments of the invention so as to provide a basic understanding of some aspects of the invention. Accordingly, it will be appreciated that the above described example embodiments are merely examples and should not be construed to narrow the scope or spirit of the invention in any way. It will be appreciated that the scope of the invention encompasses many potential embodiments, some of which will be further described below, in addition to those here summarized.

BRIEF DESCRIPTION OF THE DRAWING(S)

[0018] Having thus described embodiments of the invention in general terms, reference will now be made to the accompanying drawings, which are not necessarily drawn to scale, and wherein:

[0019] FIG. 1 illustrates a system for providing user identity management in social services according to an exemplary embodiment of the present invention;

[0020] FIG. 2 is a schematic block diagram of a mobile terminal according to an exemplary embodiment of the present invention;

[0021] FIG. 3 illustrates a block diagram of a system for providing a plurality of services, including social service identity management, to computing devices according to an exemplary embodiment of the present invention;

[0022] FIG. 4 is a flowchart according to an exemplary method for providing user identity management in social services according to an exemplary embodiment of the present invention; and

[0023] FIG. 5 is a flowchart according to an exemplary method for providing a user with guidance on the user's behavior in a social service according to an exemplary embodiment of the present invention.

DETAILED DESCRIPTION

[0024] Some embodiments of the present invention will now be described more fully hereinafter with reference to the accompanying drawings, in which some, but not all embodiments of the invention are shown. Indeed, the invention may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will satisfy applicable legal requirements. Like reference numerals refer to like elements throughout.

[0025] As used herein, a “social service” refers to a service that is accessed over a network and used by a community of users who socially interact with each other through use of the social service. Example social services include social networking services, online multiplayer game services, community message forums and discussion groups, and/or the like.

In this regard, in an exemplary embodiment, a social service comprises a “social online service.”

[0026] FIG. 1 illustrates a block diagram of a system 100 for providing user identity management in social services according to an exemplary embodiment of the present invention. As used herein, “exemplary” merely means an example and as such represents one example embodiment for the invention and should not be construed to narrow the scope or spirit of the invention in any way. It will be appreciated that the scope of the invention encompasses many potential embodiments in addition to those illustrated and described herein. As such, while FIG. 1 illustrates one example of a configuration of a system for providing user identity management in social services, numerous other configurations may also be used to implement embodiments of the present invention.

[0027] Referring now to FIG. 1, in at least some embodiments, the system 100 includes a user device 102, identity management apparatus 104, and social service provider 106 configured to communicate over a network 108. The network 108 may comprise a wireline network, wireless network, or some combination thereof, and in an exemplary embodiment comprises or is otherwise embodied as the internet. The user device 102 may be embodied as a server, desktop computer, laptop computer, mobile terminal, mobile computer, mobile phone, mobile communication device, game device, digital camera/camcorder, audio/video player, television device, radio receiver, digital video recorder, positioning device, any combination thereof, and/or the like configured to access a social service, such as from a social service provider 106. In an exemplary embodiment, the user device 102 is embodied as a mobile terminal, such as that illustrated in FIG. 2.
In this regard, FIG. 2 illustrates a block diagram of a mobile terminal 10 representative of one embodiment of a user device 102 in accordance with embodiments of the present invention. It should be understood, however, that the mobile terminal illustrated and hereinafter described is merely illustrative of one type of user device 102 that may benefit from embodiments of the present invention and, therefore, should not be taken to limit the scope of the present invention. While several embodiments of the electronic device are illustrated and will be hereinafter described for purposes of example, other types of electronic devices, such as mobile telephones, mobile computers, portable digital assistants (PDAs), pagers, laptop computers, desktop computers, gaming devices, televisions, and other types of electronic systems, may employ embodiments of the present invention.

As shown, the mobile terminal 10 may include an antenna 12 (or multiple antennas 12) in communication with a transmitter 14 and a receiver 16. The mobile terminal may also include a controller 20 or other processor(s) that provides signals to and receives signals from the transmitter and receiver, respectively. These signals may include signaling information in accordance with an air interface standard of an applicable cellular system, and/or any number of different wireless networking techniques, comprising but not limited to Wireless-Fidelity (Wi-Fi), wireless local access network (WLAN) techniques such as Institute of Electrical and Electronics Engineers (IEEE) 802.11, and/or the like. In addition, these signals may include speech data, user generated data, user requested data, and/or the like. In this regard, the mobile terminal may be capable of operating with one or more air interface standards, communication protocols, modulation types, access types, and/or the like. More particularly, the mobile terminal may be capable of operating in accordance with various first generation (1G), second generation (2G), 2.5G, third-generation (3G) communication protocols, fourth-generation (4G) communication protocols, and/or the like. For example, the mobile terminal may be capable of operating in accordance with 2G wireless communication protocols IS-136 (Time Division Multiple Access (TDMA)), Global System for Mobile communications (GSM), IS-95 (Code Division Multiple Access (CDMA)), and/or the like. Also, for example, the mobile terminal may be capable of operating in accordance with 2.5G wireless communication protocols General Packet Radio Service (GPRS), Enhanced Data (GSM) (EDGE), and/or the like. Further, for example, the mobile terminal may be capable of operating in accordance with 3G wireless communication protocols such as Universal Mobile Telecommunications System (UMTS), Code Division Multiple Access 2000 (CDMA2000), Wideband Code Division Multiple Access (WCDMA), Time Division-Synchronous Code Division Multiple Access (TD-SCDMA), and/or the like. The mobile terminal may be additionally capable of operating in accordance with 3.9G wireless communication protocols such as Long Term Evolution (LTE) or Evolved Universal Terrestrial Radio Access Network (E-UTRAN) and/or the like. Additionally, for example, the mobile terminal may be capable of operating in accordance with fourth-generation (4G) wireless communication protocols and/or the like as well as similar wireless communication protocols that may be developed in the future.

Some Narrow-band Advanced Mobile Phone System (NAMPS), as well as Total Access Communication System (TACS), mobile terminals may also benefit from embodiments of this invention, as should dual or higher mode phones (e.g., digital/analog or TDMA/CDMA/analog phones). Additionally, the mobile terminal 10 may be capable of operating according to Wireless Fidelity (Wi-Fi) protocols.

It is understood that the controller 20 may comprise circuitry for implementing audio/video and logic functions of the mobile terminal 10. For example, the controller 20 may comprise a digital signal processor device, a microprocessor device, an analog-to-digital converter, a digital-to-analog converter, and/or the like. Control and signal processing functions of the mobile terminal may be allocated between these devices according to their respective capabilities. The controller may additionally comprise an internal voice coder (VC) 20a, an internal data modem (DM) 20b, and/or the like. Further, the controller may comprise functionality to operate one or more software programs, which may be stored in memory. For example, the controller 20 may be capable of operating a connectivity program, such as a web browser. The connectivity program may allow the mobile terminal 10 to transmit and receive web content, such as location-based content, according to a protocol, such as Wireless Application Protocol (WAP), hypertext transfer protocol (HTTP), and/or the like. The mobile terminal 10 may be capable of using a Transmission Control Protocol/Internet Protocol (TCP/IP) to transmit and receive web content across the internet or other networks.

The mobile terminal 10 may also comprise a user interface including, for example, an earphone or speaker 24, a ringer 22, a microphone 26, a display 28, a user input interface, and/or the like, which may be operationally coupled to the controller 20. As used herein, “operationally coupled” may include any number or combination of intervening elements (including no intervening elements) such that operationally coupled connections may be direct or indirect and in some instances may merely encompass a functional relationship between components. Although not shown, the mobile terminal may comprise a battery for powering various circuits related to the mobile terminal, for example, a circuit to provide mechanical vibration as a detectable output. The user input interface may comprise devices allowing the mobile terminal to receive data, such as a keypad 30, a touch display (not shown), a joystick (not shown), and/or other input device. In embodiments including a keypad, the keypad may comprise numeric (0-9) and related keys (*, #). Further, for example, the mobile terminal may be capable of operating in accordance with 4G wireless communication protocols such as Universal Mobile Telecommunications System (UMTS), Code Division Multiple Access 2000 (CDMA2000), Wideband Code Division Multiple Access (WCDMA), Time Division-Synchronous Code Division Multiple Access (TD-SCDMA), and/or the like. The mobile terminal may be additionally capable of operating in accordance with 3.9G wireless communication protocols such as Long Term Evolution (LTE) or Evolved Universal Terrestrial Radio Access Network (E-UTRAN) and/or the like. Additionally, for example, the mobile terminal may be capable of operating in accordance with fourth-generation (4G) wireless communication protocols and/or the like as well as similar wireless communication protocols that may be developed in the future.

As shown in FIG. 2, the mobile terminal 10 may also include one or more means for sharing and/or obtaining data. For example, the mobile terminal may comprise a short-range radio frequency (RF) transceiver and/or interrogator 64 so that data may be shared with and/or obtained from electronic devices in accordance with RF techniques. The mobile terminal may comprise other short-range transceivers, such as, for example, an infrared (IR) transceiver 66, a Bluetooth™ (BT) transceiver 68 operating using Bluetooth™ brand wireless technology developed by the Bluetooth™ Special Interest Group, a wireless universal serial bus (USB) transceiver 70 and/or the like. The Bluetooth™ transceiver 68 may be capable of operating according to ultra-low power Bluetooth™ technology (e.g., WiBree™) radio standards. In this regard, the mobile terminal 10 and, in particular, the short-range transceiver may be capable of transmitting data to and/or receiving data from electronic devices within a proximity of the mobile terminal, such as within 10 meters, for example.
Although not shown, the mobile terminal may be capable of transmitting and/or receiving data from electronic devices according to various wireless networking techniques, including Wireless Fidelity (Wi-Fi), WLAN techniques such as IEEE 802.11 techniques, and/or the like.

[0034] The mobile terminal 10 may comprise memory, such as a subscriber identity module (SIM) 38, a removable user identity module (R-UIM), and/or the like, which may store information elements related to a mobile subscriber. In addition to the SIM, the mobile terminal may comprise other removable and/or fixed memory. The mobile terminal 10 may include volatile memory 40 and/or non-volatile memory 42. For example, volatile memory 40 may include Random Access Memory (RAM) including dynamic and/or static RAM, on-chip or off-chip cache memory, and/or the like. Non-volatile memory 42, which may be embedded and/or removable, may include, for example, read-only memory, flash memory, magnetic storage devices (e.g., hard disks, floppy disk drives, magnetic tape, etc.), optical disc drives and/or media, non-volatile random access memory (NVRAM), and/or the like. Like volatile memory 40 non-volatile memory 42 may include a cache area for temporary storage of data. The memories may store one or more software programs, instructions, pieces of information, data, and/or the like which may be used by the mobile terminal for performing functions of the mobile terminal. For example, the memories may comprise an identifier, such as an international mobile equipment identity identification (IMEI) code, capable of uniquely identifying the mobile terminal 10.

[0035] Returning to FIG. 1, the user device 102 is not limited to being embodied as a mobile terminal 10 and as previously described, may be embodied as any computing device, mobile or fixed. The identity management apparatus 104 may be embodied as any computing device or plurality of computing devices configured to provide identity management services to users of the system 100 as will be described further herein. The social service provider 106 may be embodied as any computing device or plurality of computing devices configured to provide a social service to a user device 102 and in at least one embodiment is embodied as a server. Although illustrated in FIG. 1 as a separate apparatus, the identity management apparatus 104 is, in some embodiments, at least partially embodied on the user device 102 and/or the social service provider 106. In some embodiments, the identity management apparatus 104 and thus functionality attributed thereto is distributed amongst one or more computing devices of the system 100. Although only a single user device 102, identity management apparatus 104, and social service provider 106 are illustrated in FIG. 1, the system 100 may comprise a plurality of user devices 102, identity management apparatuses 104, and/or social service providers 106.

[0036] In an exemplary embodiment, the user device 102 includes various means, such as a processor 110, memory 112, communication interface 114, user interface 116, and service access unit 118 for performing various functions herein described. These means of the user device 102 as described herein may be embodied as, for example, hardware elements (e.g., a suitably programmed processor, combina- tional logic circuit, and/or the like), computer code (e.g., software or firmware) embodied on a computer-readable medium (e.g. memory 112) that is executable by a suitably configured processing device (e.g., the processor 110), or some combination thereof. The processor 110 may, for example, be embodied as various means including a microprocessor, a coprocessor, a controller, or various other processing elements including integrated circuits such as, for example, an ASIC (application specific integrated circuit) or FPGA (field programmable gate array). In embodiments wherein the user device 102 is embodied as a mobile terminal 10, the processor 110 may be embodied as or otherwise comprise the controller 20. In an exemplary embodiment, the processor 110 is configured to execute instructions stored in the memory 112 or otherwise accessible to the processor 110. Although illustrated in FIG. 1 as a single processor, in some embodiments the processor 110 comprises a plurality of processors.

[0037] The memory 112 may include, for example, volatile and/or non-volatile memory. The memory 112 may be configured to store information, data, applications, instructions, or the like for enabling the user device 102 to carry out various functions in accordance with exemplary embodiments of the present invention. For example, the memory 112 may be configured to buffer input data for processing by the processor 110. Additionally or alternatively, the memory 112 may be configured to store instructions for execution by the processor 110. The memory 112 may comprise one or more databases that store information in the form of static and/or dynamic information. In this regard, the memory 112 may store, for example, social service usage information for a user of the user device 102. This stored information may be stored and/or used by the service access unit 118 during the course of performing its functionalities. Additionally or alternatively, stored social service usage information may be stored and/or accessed by the identity management apparatus 104 and/or the social service provider 106.

[0038] The communication interface 114 may be embodied as any device or means embodied in hardware, software, firmware, or a combination thereof that is configured to receive and/or transmit data from/to a remote device, such as the identity management apparatus 104, social service provider 106, and/or other user devices 102 over the network 108. In at least one embodiment, the communication interface 114 is at least partially embodied as or otherwise controlled by the processor 110. The communication interface 114 may include, for example, an antenna, a transmitter, a receiver, a transceiver and/or supporting hardware or software for enabling communications with other entities of the system 100. The communication interface 114 may be configured to receive and/or transmit data using any protocol that may be used for communications between computing devices of the system 100. In at least some embodiments, the communication interface 114 is in communication with the memory 112, user interface 116, and/or service access unit 118, such as via a bus.

[0039] In at least some embodiments, the user interface 116 is in communication with the processor 110 to receive an indication of a user input and/or to provide an audible, visual, mechanical, or other output to the user. As such, the user interface 116 may include, for example, a keyboard, a mouse, a joystick, a display, a touch screen display, a microphone, a speaker, and/or other input/output mechanisms. The user interface 116 may be configured to provide means for interacting with a social service provided by the social service provider 106. In at least some embodiments, the user interface 116 is in communication with the memory 112, communication interface 116, and/or service access unit 118, such as via a bus.
The service access unit 118 may be embodied as various means, such as hardware, software, firmware, or some combination thereof, and, in one embodiment, is embodied as or otherwise controlled by the processor 110. In embodiments where the service access unit 118 is embodied separately from the processor 110, service access unit 118 may be in communication with the processor 110. The service access unit 118 is configured to provide means for a user of the user device 102 to access and use a social service. In one embodiment, the service access unit 118 comprises a web browser. In some embodiments, the service access unit 118 comprises a standalone application that may be specific to a particular social service, such as, for example, a gaming application.

Referring now to the identity management apparatus 104, embodiments of the identity management apparatus 104 include various means, such as a processor 120, memory 122, communication interface 124, behavior modeling unit 126, and identity services unit 128 for performing the various functions herein described. These means of the identity management apparatus 104 as described herein may be embodied as, for example, hardware elements (e.g., a suitably programmed processor, combinational logic circuit, and/or (the like), computer code (e.g., software or firmware) embodied on a computer-readable medium (e.g. memory 122) that is executable by a suitably configured processing device (e.g., the processor 120), or some combination thereof. The processor 120 may, for example, be embodied as various means including a microprocessor, a coprocessor, a controller, or various other processing elements including integrated circuits such as, for example, an ASIC (application specific integrated circuit) or FPGA (field programmable gate array). In an exemplary embodiment, the processor 120 is configured to execute instructions stored in the memory 122 or otherwise accessible to the processor 120. Although illustrated in FIG. 1 as a single processor, in some embodiments, the processor 120 comprises a plurality of processors, which may operate cooperatively, such as in parallel. In embodiments wherein the processor 120 is embodied as a plurality of processors, the plurality of processors may be embodied in a single computing device or in a plurality of computing devices operating cooperatively to implement the identity management apparatus 104.

The memory 122 may include, for example, volatile and/or non-volatile memory. The memory 122 may be configured to store information, data, applications, instructions, or the like. For example, the memory 122 may be configured to buffer input data for processing by the processor 120. Additionally or alternatively, the memory 122 may be configured to store instructions for execution by the processor 120. The memory 122 may comprise one or more databases that store information in the form of static and/or dynamic information. In this regard, the memory 122 may store, for example, social service user information, behavior models for individual users and/or a plurality of users of a social service, and/or the like. This stored information may be stored and/or used by the behavior modeling unit 126 and identity services unit 128 during the course of performing their respective functionalities.

The communication interface 124 may be embodied as any device or means embodied in hardware, software, firmware, or a combination thereof that is configured to receive and/or transmit data from/to a remote device, such as a user device 102 and/or a social service provider 106 over the network 108. In one embodiment, the communication interface 124 is at least partially embodied as or otherwise controlled by the processor 120. The communication interface 124 may include, for example, an antenna, a transmitter, a receiver, a transceiver and/or supporting hardware or software for enabling communications with other entities of the system 100. The communication interface 124 may be configured to receive and/or transmit data using any protocol that may be used for communications between computing devices of the system 100. In at least some embodiments, the communication interface 124 is in communication with the memory 122, behavior modeling unit 126, and/or identity services unit 128, such as via a bus.

The behavior modeling unit 126 may be embodied as various means, such as hardware, software, firmware, or some combination thereof, and, in one embodiment, is embodied as or otherwise controlled by the processor 120. In embodiments wherein the behavior modeling unit 126 is embodied separately from the processor 120, the behavior modeling unit 126 may be in communication with the processor 120. The behavior modeling unit 126 is configured in at least some embodiments to model a user’s behavior and/or the user’s virtual world identity on a social service provided by a social service provider 106 to generate a user behavior model. Further, in at least some embodiments, the behavior modeling unit 126 is configured to model the aggregate behavior of a plurality of users of a social service provided by a social service provider 106 to generate a behavior model representative of an aggregate community behavior for the social service.

The identity services unit 128 may be embodied as various means, such as hardware, software, firmware, or some combination thereof, and, in one embodiment, is embodied as or otherwise controlled by the processor 120. In embodiments wherein the identity services unit 128 is embodied separately from the processor 120, the identity services unit 128 may be in communication with the processor 120. The identity services unit 128 is configured in at least some embodiments to provide a user with identity management services, such as, for example, guidance about a user’s behavior on a social service based at least in part upon a behavior model generated by the behavior modeling unit 126.

In at least some embodiments, the behavior modeling unit 126 is configured to monitor behavior of one or more users on a social service provided by the social service provider 106. In some embodiments, the behavior modeling unit 126 is configured to monitor behavior of one or more users on a plurality of social services provided by one or more social service providers 106. In this regard, the behavior modeling unit 126 may monitor various aspects of a user’s behavior on a social service. In some embodiments, the behavior modeling unit 126 monitors one or more of a length of a user’s membership in and/or use of a social service, a frequency with which a user uses a social service, a user’s activities on the social service, contents of a user’s profile page, content shared by the user on the social service, content accessed by the user on the social service, the user’s interaction with other users of the social service, whether the user is an initiator or participant in activities on the social service, privacy settings for a user, and/or the like. The behavior modeling unit 126 may monitor content of messages exchanged between a user and other users of a social service. Additionally or alternatively, the behavior modeling unit 126 may monitor content of postings made by a user to a bulletin board and/or content of
postings to a bulletin board read by the user. The behavior modeling unit 126 may monitor a quantity and/or content of files (e.g., music files, video files, and/or the like) and/or other data uploaded to a social service by a user. The behavior modeling unit 126 may further monitor a quantity and/or content of files and/or other data accessed through a social service by a user of the social service. In some embodiments, the behavior modeling unit 126 may be configured to monitor user behavior constantly, such that the behavior modeling unit 126 monitors user activities on the social service as they occur. Additionally or alternatively, the behavior modeling unit 126 may be configured to monitor user behavior by periodically mining data relating to a user’s behavior on a social service. Further, in some embodiments, the behavior modeling unit 126 may be configured to monitor a user’s activities in multiple social services provided by one or more social service providers 106.

[0047] The behavior modeling unit 126 is configured in at least some embodiments to store a log of the monitored user behavior, such as in the memory 122. In exemplary embodiments, the behavior modeling unit 126 is further configured to utilize monitored user behavior to generate behavior models. In this regard, the behavior modeling unit 126 may semantically analyze monitored user behavior over a period of time to generate behavior models for one or more users of a social service(s). Further, the behavior modeling unit may aggregate and semantically analyze monitored user behavior for a plurality of users to generate a community behavior model representative of an aggregate community behavior for the plurality of users. In an exemplary embodiment, the behavior modeling unit 126 is configured to use longitudinal modeling and analysis of monitored user behavior to generate a behavior model. The behavior modeling unit 126 may store generated behavior models in a memory, such as the memory 122.

[0048] The behavior modeling unit 126 may be configured to generate and/or update a previously generated behavior model upon an occurrence of a user activity or event in a social service or after a user has engaged in some threshold level of activity on a social service (e.g., a number of accesses to the social service, an amount of time spent on the social service, and/or the like). Additionally or alternatively, the behavior modeling unit 126 may be configured to generate and/or update a previously generated behavior model periodically (e.g., every three days). The behavior modeling unit 126 may update a previously generated behavior model with monitored behavior occurring since the behavior model was generated and/or previously updated.

[0049] The identity services unit 128 is configured in at least some embodiments to provide identity management services to one or more users of a social service provided by a social service provider 106 based at least in part upon one or more behavior models generated by the behavior modeling unit 126. In an exemplary embodiment, the identity services unit 128 is configured to provide a user guidance and/or other information about the user’s behavior on the social service based at least in part upon a behavior model representative of the user’s behavior over a period of time on the social service, which may comprise, for example, an average behavior of the user.

[0050] In at least some embodiments, the identity services unit 128 is configured to detect deviant behavior. In this regard, if a user’s current or recent behavior taking place over a first period of time differs remarkably (e.g., more than a predefined threshold behavior quantum) from his previously logged behavior taking place over a period of time longer than the first period of time, as represented in a behavior model for the user generated by the behavior modeling unit 126, the identity services unit may notify the user that his recent behavior over the first period of time deviates from the user’s behavior over the longer period of time (e.g., a previous average behavior of the user). This notification may comprise a notification that the user’s recent behavior has deviated from his previous behavior (e.g., normal behavior) and a description of what activities of the user have deviated from the previous behavior indicated in the user’s behavior model. The user may then take action to correct the deviation so that the user may maintain a consistent identity on the social service.

[0051] Additionally or alternatively, the identity services unit 128 may be configured to determine that a deviation in user behavior is greater than a predefined threshold such that it is possible that the user’s social service account has been hacked by a malicious imposter utilizing the user’s social service identity. Thus, there may be multiple thresholds of deviant behavior. A first threshold, for example, may indicate that a user has deviated to some degree from his previous behavior such that the user may not be presenting a consistent identity on the social service, but the degree of deviation is not enough to indicate that a malicious imposter has hacked the user’s social service account. A second threshold, for example, may indicate a degree of deviation so severe that there is a likely possibility that a malicious user has hacked the user’s social service account. If the identity services unit 128 determines that a deviation in a user’s behavior is of such a degree that a malicious imposter may have hacked the user’s social service identity, the identity services unit 128 may be configured to present an authentication challenge the next time someone accesses the user’s social services account. For example, the identity services unit 128 may force the accessing user to answer some questions that are related to the acknowledged user or a social service community that the acknowledged user is a member of to authenticate that the accessing user is the acknowledged user and not a malicious imposter.

[0052] The identity services unit 128 is configured to determine deviation from previous behavior over a longer period of time as described in a user behavior model based at least in part upon any of the behaviors monitored by the behavior modeling unit 126 and described in a user behavior model. For example, if a user has previously accumulated a lot of data (e.g., files, virtual objects), but not shared it, and then someone using the user’s social service identity begins to share data, the identity services unit 128 is configured to notice this deviant behavior through a comparison of the user’s recent behavior to the user’s behavior model.

[0053] In at least some embodiments, the identity services unit 128 is configured to provide a user guidance and/or information about community behavioral norms, such as may represent the culture of a social service. The identity services unit 128 may base such guidance and information at least in part upon a community behavior model generated by the behavior modeling unit 126, which the identity services unit 128 may access from the memory 122.

[0054] For example, the identity services unit 128 may be configured to provide a user of a social service with information about common social service configuration settings used by users of the social service. In this regard, the identity services unit 128 may be configured to indicate next to the different features and/or configuration settings of a social
service (e.g., features and configuration settings displayed in a display of the user device 102) how common use of the feature is by other users of the social service (e.g., percentage of users using the feature) and/or an indication of a configuration setting most commonly preferred by other users of the social service. For example, the identity services unit 128 may provide an overview of the community culture through tag clouds, “most popular content” lists, “most active discussion topics” lists, and/or the like. In another example, the identity services unit 128 may be configured, when a user is defining, for example, a social service’s privacy or other configuration settings, to display a tooltip showing a percentage of other users on the social service having implemented a particular configuration setting, disclosing a particular information type, and/or the like. Accordingly, a user may learn the community behavior for a social service and can make decision on how to behave or otherwise utilize a social service accordingly.

[0055] The identity services unit 128 is further configured in an exemplary embodiment to compare a user’s user behavior model to a community behavior model for a social service to determine whether the user’s behavior on the social service deviates from the community behavior. The identity services unit 128 may be further configured to provide a user guidance and/or other information regarding how the user’s behavior deviates from the community behavior so that the user can take action to change his behavior in instances wherein behaving differently from the community behavior may be inadvisable (e.g., when doing so may offend other users of a social service and/or otherwise risk the user’s standing in the social service).

[0056] The identity services unit 128 is configured in at least some embodiments to provide support for managing a user’s virtual world identity on a social service. In this regard, when a user is engaging in an activity on or utilizing a service provided by a social service, the identity services unit 128 may be configured to indicate to the user how the user has behaved previously in similar situations. For example, when a user is posting messages to a discussion forum, the identity services unit 128 may be configured to show the user related messages that the user has previously posted to the service. Accordingly, the user may utilize the previous examples to post a new message consistent with his previously posted messages to maintain a consistent virtual world identity on the social service. For example, a user may participate in multiple forums on a single social service or across multiple social services and may not remember a virtual world identity which the user has previously presented in one or more forums. A user may, for example, post foolish messages in one forum without regard for his credibility, while in another forum the user may present himself as credible on a certain topic. Accordingly, when the user is presented with examples of his previous behavior on a forum, the user may ascertain how to behave in posting a future post so as to maintain a consistent virtual world identity on the forum.

[0057] Additionally, in at least one embodiment, the identity services unit 128 is configured to provide a user guidance and/or other information about how other users of a social service perceive the user based at least in part upon a behavior model for the user generated by the behavior modeling unit 126. In this regard, the identity services unit 128 may be configured to create an “external awareness” about the user and her behavior help the user to decide how to behave on a social service (e.g., what data to share, how to adapt her public profile, and/or the like). The identity services unit 128 may provide the user with guidance in the form of a list of characteristics and a value (e.g., 1-100) assigned to the characteristic based at least in part upon the user’s average behavior on the social service as indicated by the user behavior model. The identity services unit 128 may be further configured to mine data provided to a social service by other users that relates to a particular user and utilize that data to provide the user with guidance and/or other information about how other users perceive the user. For example, User A may have an avatar with a hat and other users may have commented that the hat makes User A’s head look big. The identity services unit 128 may provide the user with an indication of the content of the comments, such as by showing the comments to User A or by showing User A a distorted picture of his avatar with a big head to indicate the perception of other users. In another example, User A may have made a large collection of music available on a social service and other users may comment that User A’s taste in music seems “psychedelic.” The identity services unit 128 may show User A her music files with psychedelic fonts and may distort an album cover for a music file with psychedelic effects. Accordingly, the identity services unit 128 may be configured to transform information and content belonging to a user on the basis of what other users discuss about the user. The identity services unit 128 may be configured to transform information in this manner to provide an external awareness to a user upon a request of the user for guidance and/or other information on the user’s perception within the social service or while a user is using the social service in a “social simulation mode” that automatically provides the user guidance and/or other information.

[0058] Online identity management functionality provides the possibility for a user to create several virtual world aliases and control each of them individually. The identity services unit 128 may be configured to alert a user if the user is about to engage in a behavior that would disclose information enabling other users to find out the user’s real world identity or another virtual world alias identity. For example, if a user is about to publicly provide personal information, such as a phone number, job description, address, and/or the like on a social service, the identity services unit 128 may warn the user of the risk of disclosing the user’s real world identity. In some embodiments, the identity services unit 128 may be configured to automatically censor and/or otherwise filter out (e.g., in accordance with a user-defined privacy setting) such personal information prior to posting the information on the social service such that it is publically accessible.

[0059] The awareness of one’s virtual world identity provided by the identity services unit 128 may be used to create a personal virtual world identity for a user optimally unlike the user’s real world identity. Other example use cases for online identity management include, for example, creating and adjusting an ideal image of oneself in a dating service, polishing one’s public profiles before job interviews, making a user profile optimal before joining new communities in order to avoid social complications there, and/or the like.

[0060] In at least some embodiments, the identity services unit 128 is configured to discover information in online services about a user that is false and alert the user to presence of the false information. In this regard, the identity services unit 128 may mine information provided to a social service by other users of the social service to identify information provided about a user. The identity services unit 128 may then determine whether any of the provided information about the
user is false based at least in part upon the behavior model for the user generated by the behavior modeling unit 126. If any information is false, the identity services unit 128 is configured to notify the user of the presence of the false information so that the user can take action to maintain his privacy and virtual world reputation without risk of damage from continued disclosure of the false information.

[0061] In at least some embodiments, the identity services unit 128 may be further configured to provide a social counselor that advises a user on how to act in a social interaction or other situation encountered in a social service. In this regard, the identity services unit 128 may access (e.g., from memory 122) one or more of a behavior profile for another user(s) or a community behavior profile generated by the behavior modeling unit 126 and provide a user with advice on how to behave in a social interaction or other situation based at least in part upon the behavior model(s). For example, when User A is interacting with User B, the identity services unit 128 may utilize a user behavior model for User B to determine User B’s previous behavior in similar situations and provide User A with advice on how to behave in the social interaction based at least in part upon the determination. Similarly, if User A is engaging in an activity on a social service, the identity services unit 128 may utilize a community behavior model for the social service to determine a community behavioral norm for the activity and provide User A with advice on how to behave in the activity based at least in part upon the determination. The given advice may be based on what is a probable (e.g., the most probable) outcome of a social interaction in that community. For example, the identity services unit 128 may provide advance warnings such as, “If you continue doing that, you will soon get hate mail,” “If you now do this, the following good/bad result might occur . . .,” and/or the like. Accordingly, the social advice may aid in socially educating the user to the culture of a social service.

[0062] In at least some embodiments, the identity services unit 128 is configured to provide bots for social simulations. In this regard, in an exemplary embodiment, the behavior modeling unit 126 has created and/or may create on demand user behavior models for all users of a social service. A user may request a simulated social interaction between himself and one or more selected users. The identity services unit 128 is configured to receive the request and generate a bot for each selected user that is configured to simulate the selected user based at least in part upon a user behavior model for the selected user. Each bot is configured to look and behave in a similar way as the user it is configured to simulate. Accordingly, the identity services unit 128 is configured to utilize a bot to provide a requesting user a simulated interaction with a selected user using the bot. A user may simulate interactions with another user to acclimate himself to another user’s behavioral preferences, community behavioral norms on a social service, and/or the like.

[0063] The identity services unit 128 is configured in at least some embodiments to provide game play advice for multiplayer gaming social services. In this regard, the behavior modeling unit 126 may be configured to monitor user behavior on a multi-player gaming service and generate user behavior models representative of a user’s behavior in various scenarios on a multi-player gaming service. The identity services unit 128 may be configured to access user behavior models for one or more other users that User A is playing with or against in a game to determine a predicted future action of another user. In this regard, the identity services unit 128 may compare a recent action of a user to a user behavior model for the user to determine a predicted future action. The identity services unit 128 may then provide User A with advice based at least in part upon a predicted future action.

[0064] For example, the identity services unit 128 may be configured to interpret the actions of the other users and may warn User A of actions that are planned or being arranged against him by other users. This “heads up” use case is relevant for example in multi-player games, where the identity services unit 128 can give the user a warning of assaults and raids planned against him. The identity services unit 128 may be configured to provide such gaming advice based at least in part upon an expertise and/or handicap level defined by a user, such that the identity services unit 128 may provide more advice to novice players than to experienced players. Further, a user may, for example, define activities, behavior, and/or keywords associated with his user name that he wants the identity services unit 128 to monitor in the activities (e.g., communications) of other users and to provide advice based at least in part upon the monitored keywords, activities, or behavior.

[0065] In some embodiments, the system 100 may comprise a portion of a system for providing a plurality of services to users of computing devices, such as, for example, a user device 102. In this regard, and referring now to FIG. 3, an embodiment of a system 300 for providing a plurality of services, including social service identity management, to computing devices in accordance with aspects of the present invention is illustrated. The system 300 may include an account management provider 310 and a service provider 320 in addition to the elements of the system 100. In this regard, the user device 102, the identity management apparatus 104, the social service provider 106, the account management provider 310, and the service provider 320 may be interconnected via the illustrated network 108.

[0066] The account management provider 310 may comprise any computing device or plurality of computing devices configured to (e.g., through specially configured hardware, such as, an appropriately configured processor, and/or through specially configured software, such as may be executed by a processor) provide a single service sign-on and/or interface to a plurality of services and/or service providers such that a user of a computing device may access a plurality of services through a single integrated account interface provided by the account management provider 310. Accordingly, in an exemplary embodiment, the account management provider 310 comprises a service provider in that the account management provider 310 provides a gateway to a plurality of services. An example of the functionality that may be provided by an account management provider 310 may be found at Nokia’s www.ovi.com. As used herein, “service” may include data or other content as well as services, such as, for example, e-mail, instant messaging, multi-player gaming, peer-to-peer file transfer, web browsing, social networking, photograph hosting, video hosting, and other multimedia hosting services that may be accessed by and/or supplied to remote computing devices over a network or communications link, such as the network 108. In this regard, the provision of social service identity management by the identity management apparatus 104 and provision of a social service by the social service provider 106 comprises a service. Accordingly, a user of a computing device may be able to access the social service provider 106 and/or identity management services provided by the identity management apparatus 104 through
the account management provider 310. Users may register computing devices, such as, for example, a user device 102, with the account management provider 310 such that the user may access services from the account management provider 310 using the user device 102. These services may be provided by the identity management apparatus 104, social service provider 106, and/or service provider 320. Although only one service provider 320 is shown in FIG. 3, the system 300 may comprise a plurality of service providers 320. In this regard, each service provider 320 represents a service provider, such as, for example, a multimedia service provider, which may be accessed through the account management provider 310.

Accordingly, a user of a user device 102 may register or otherwise interface a user device 102 with the account management provider 310. Subsequent to registering a user device 102 with the account management provider 310, a user may log into the account management provider 310 and access social services and social service identity management services as described in connection to the system 100.

FIGS. 4-5 are flowcharts of a system, method, and computer program product according to an exemplary embodiment of the invention. It will be understood that each block or step of the flowchart, and combinations of blocks in the flowcharts, may be implemented by various means, such as hardware, firmware, and/or software including one or more computer program instructions. For example, one or more of the procedures described above may be embodied by computer program instructions. In this regard, the computer program instructions which embody the procedures described above may be stored by a memory device of a mobile terminal, server, or other computing device and executed by a processor in the computing device. In some embodiments, the computer program instructions which embody the procedures described above may be stored by memory devices of a plurality of computing devices. As will be appreciated, any such computer program instructions may be loaded onto a computer or other programmable apparatus to produce a machine, such that the instructions execute on the computer or other programmable apparatus create means for implementing the functions specified in the flowchart block(s) or step(s). These computer program instructions may also be stored in a computer-readable memory that can direct a computer or other programmable apparatus to function in a particular manner, such that the instructions stored in the computer-readable memory produce an article of manufacture including instruction means which implement the function specified in the flowchart block(s) or step(s). The computer program instructions may also be loaded onto a computer or other programmable apparatus to cause a series of operational steps to be performed on the computer or other programmable apparatus to produce a computer-implemented process such that the instructions which execute on the computer or other programmable apparatus provide steps for implementing the functions specified in the flowchart block(s) or step(s).

Accordingly, blocks or steps of the flowcharts support combinations of means for performing the specified functions, combinations of steps for performing the specified functions and program instruction means for performing the specified functions. It will also be understood that one or more blocks or steps of the flowcharts, and combinations of blocks or steps in the flowcharts, may be implemented by special purpose hardware-based computer systems which perform the specified functions or steps, or combinations of special purpose hardware and computer instructions.

In this regard, one exemplary method for providing user identity management in social services according to an exemplary embodiment of the present invention is illustrated in FIG. 4. The method includes User ‘A’ joining social service ‘X’ and/or registering for identity management services for social service ‘X’, at operation 400. Although only a single social service ‘X’ is referred to in FIG. 4, it will be appreciated that in some embodiments, the invention monitors user behavior across a plurality of services and provides identity management across the plurality of services. In such embodiments, User ‘A’ may accordingly join multiple social services and/or register for identity management services for multiple social services, at operation 400. Thus, where social service ‘X’ is referred to in the description of FIG. 4, the operations may be performed across two or more social services (e.g., social services ‘X’, ‘Y’, and ‘Z’). Operation 410 comprises the behavior modeling unit 126 monitoring the behavior of User ‘A’ on social service ‘X’. In this regard, the behavior modeling unit 126 may access and analyze a plurality of behavior records of User ‘A’ at operation 420. These behavior records may include, for example, contents of User ‘A’s profile page (s) 421, contents of postings written by User ‘A’ 422, contents of postings read by User ‘A’ 423, contents of files uploaded to social service ‘X’ and/or shared with other users of social service ‘X’ by User ‘A’ 424, contents of files accessed by User ‘A’ 425, and/or other activities and behavior of User ‘A’ on social service ‘X’ (e.g., including additional activities and behavior examples previously described to be monitored by the behavior modeling unit 126). Operation 430 comprises the behavior modeling unit 126 generating or updating a user behavior model of User ‘A’. In embodiments wherein the behavior modeling unit 126 is configured to monitor the behavior of User ‘A’ on multiple social services, operation 430 may comprise the behavior modeling unit 126 generating or updating a user behavior model of User ‘A’ for each individual social service and/or generating or updating an aggregate user behavior model of User ‘A’ for multiple social services. Operation 440 comprises the behavior modeling unit 126 determining whether it needs to update the user behavior model of User ‘A’. This determination may be made based at least in part upon any defined criteria including, for example, passage of a predefined threshold of time (e.g., three days) since the last update, a level of User ‘A’s activity on social service ‘X’ (e.g., as indicated by cookies on the user device 102) since the last update, and/or other criteria previously described. If the behavior modeling unit 126 determines that the behavior model needs to be updated, the method returns to operation 420 to monitor additional behavior and activities of User ‘A’. If the behavior model does not need to be updated, operation 450 comprises the identity services unit 128 providing identity management services, such as guidance and/or other information about User ‘A’s behavior on social service ‘X’, to User ‘A’ based at least in part upon the user behavior model of User ‘A’.

FIG. 5 illustrates a flowchart according to an exemplary method for providing a user with guidance on the user’s behavior in a social service according to an exemplary embodiment of the present invention. The method includes the identity services unit 128 comparing a user behavior model for a user to the user’s recent behavior and/or to another behavior model, at operation 500. In this regard, the identity services unit 128 may, for example, compare behav-
ior of the first user over a first period of time (e.g., recent behavior of the user) to the user’s behavior over a longer period of time as described by the user behavior model to determine whether the user’s behavior over the first period of time deviates from the user’s behavior over the longer period of time. Additionally or alternatively, for example, operation 500 may comprise the identity services unit 128 comparing the user behavior model to a community behavior model to determine whether the user’s behavior deviates from the community behavior of the social service.

[0072] Operation 510 optionally comprises the identity services unit 128 providing guidance based at least in part upon the comparison in operation 500 if a deviation in the user’s behavior (e.g., a deviation from the user’s previous behavior or from the community behavior) is detected. In this regard, the identity services unit 128 may provide appropriate guidance by causing a user interface element to be displayed to the user on a display of the user device 102 (such as with the assistance of the service access unit 118). The user interface element may comprise, for example, a popup window or bubble displayed on top of the social service user interface and displaying guidance or other information about the detected deviation in the user’s behavior. Alternatively, the user interface element may comprise a dedicated portion of a user interface for the social service in which guidance or other information about the user’s behavior is provided to the user.

[0073] Operation 520 optionally comprises the user acknowledging receipt of the guidance. In this regard, some embodiments may require the user clicking on a checkbox within the user interface element displayed in operation 510, taking some action to correct their behavior based on the guidance provided, or to take some other action to acknowledge receipt of the guidance. Operation 530 may comprise the identity services unit 128 and/or service access unit 118 altering the user interface for the social service based at least in part upon the provided guidance and/or the user acknowledgment. For example, some function of the social service may be locked from use by the user as a result of the guidance or acknowledgement (e.g., a decision made by the user to no longer use the function). Accordingly, the identity management apparatus 104 is configured to interact with an end user through the identity services unit 128 (e.g., with the assistance of the service access unit 118) to provide guidance to the user and assist the user in taking action to correct any behavioral deviation so that the user may manage his virtual world identity in a social service.

[0074] The above described functions may be carried out in many ways. For example, any suitable means for carrying out each of the functions described above may be employed to carry out embodiments of the invention. In one embodiment, a suitably configured processor may provide all or a portion of the elements of the invention. In another embodiment, all or a portion of the elements of the invention may be configured by and operate under control of a computer program product. The computer program product for performing the methods of embodiments of the invention includes a computer-readable storage medium, such as the non-volatile storage medium, and computer-readable program code portions, such as a series of computer instructions, embodied in the computer-readable storage medium.

[0075] As such, then, some embodiments of the invention provide several advantages to a user of a social service. Embodiments of the invention provide user identity management in social services. In this regard, embodiments of the invention model behavior of one or more users of a social service. At least some embodiments provide for externalization of user behavior such that a user may review his virtual world identity and how other users of the social service perceive him. In this regard, embodiments of the invention provide social service users the ability to keeping track of a virtual world identity presented by the user so that a user may present a consistent virtual world identity within a social service. Embodiments of the invention further provide advice to a user on how to behave in a social service so that the user may conform his behavior to the community behavioral norm for the social service.

[0076] Many modifications and other embodiments of the inventions set forth herein will come to mind to one skilled in the art to which these inventions pertain having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Therefore, it is to be understood that the embodiments of the invention are not to be limited to the specific embodiments disclosed and that modifications and other embodiments are intended to be included within the scope of the appended claims. Moreover, although the foregoing descriptions and the associated drawings describe exemplary embodiments in the context of certain exemplary combinations of elements and/or functions, it should be appreciated that different combinations of elements and/or functions may be provided by alternative embodiments without departing from the scope of the appended claims. In this regard, for example, different combinations of elements and/or functions than those explicitly described above are also contemplated as may be set forth in some of the appended claims. Although specific terms are employed herein, they are used in a generic and descriptive sense only and not for purposes of limitation.

What is claimed is:
1. A method comprising:
   - monitoring a first user’s behavior on a social service;
   - generating, with a processor, a first user behavior model representative of the first user’s behavior over a period of time on the social service based at least in part upon the first user's monitored behavior; and
   - providing the first user guidance about the first user’s behavior based at least in part upon the first user behavior model.

2. A method according to claim 1, further comprising:
   - comparing behavior of the first user over a first period of time to the first user behavior model to determine whether the first user’s recent behavior over the first period of time deviates from the first user’s behavior over a longer period of time; and
   - wherein providing the first user guidance comprises notifying the first user when the first user’s behavior over the first period of time deviates from the first user’s behavior over the longer period of time.

3. A method according to claim 1, further comprising:
   - comparing the first user behavior model to a community behavior model representative of an aggregate community behavior for a plurality of users of the social service to determine whether the first user’s behavior deviates from the community behavior; and
wherein providing the first user guidance comprises providing the first user guidance based at least in part upon the comparison between the first user's behavior and the community behavior.

4. A method according to claim 1, wherein providing the first user guidance comprises providing the first user guidance about an action in which the first user is engaging on the social service to enable the first user to maintain a consistent identity on the social service based at least in part upon the first user behavior model.

5. A method according to claim 1, further comprising: maintaining at least one of a second behavior model representative of a second user's behavior on the social service or a third behavior model representative of an aggregate community behavior for a plurality of users of the social service based at least in part upon an aggregation of the behavior of the plurality of users of the social service; and providing the first user with advice on how to behave in a social interaction on the social service based at least in part upon at least one of the second behavior model or the third behavior model.

6. A computer program product comprising at least one computer-readable storage medium having computer-readable program instructions stored therein, the computer-readable program instructions comprising:

a program instruction for monitoring a first user's behavior on a social service;

a program instruction for generating a first user behavior model representative of the first user's behavior over a period of time on the social service based at least in part upon the first user's monitored behavior;

a program instruction for providing the first user guidance about the first user's behavior based at least in part upon the first user behavior model.

7. A computer program product according to claim 6, further comprising:

a program instruction for comparing behavior of the first user over a first period of time to the first user behavior model to determine whether the first user's behavior over the first period of time deviates from the first user's average behavior over a longer period of time; and

wherein the program instruction for providing the first user guidance comprises instructions for notifying the first user when the first user's behavior over the first period of time deviates from the first user's behavior over the longer period of time.

8. A computer program product according to claim 6, further comprising:

a program instruction for comparing the first user behavior model to a community behavior model representative of an aggregate community behavior for a plurality of users of the social service based at least in part upon an aggregation of the behavior of the plurality of users of the social service to determine whether the first user's behavior deviates from the community behavior; and

wherein the program instruction for providing the first user guidance comprises instructions for providing the first user guidance based at least in part upon the comparison between the first user's behavior and the community behavior.

9. A computer program product according to claim 6, wherein the program instruction for providing the first user guidance comprises providing the first user guidance about an action in which the first user is engaging on the social service to enable the first user to maintain a consistent identity on the social service based at least in part upon the first user behavior model.

10. A computer program product according to claim 6, further comprising:

a program instruction for maintaining at least one of a second behavior model representative of a second user's behavior on the social service or a third behavior model representative of an aggregate community behavior for a plurality of users of the social service based at least in part upon an aggregation of the behavior of the plurality of users of the social service; and

a program instruction for providing the first user with advice on how to behave in a social interaction on the social service based at least in part upon at least one of the second behavior model or the third behavior model.

11. An apparatus comprising a processor configured to:

monitor a first user's behavior on a social service;

generate a first user behavior model representative of the first user's behavior on the social service based at least in part upon the first user's monitored behavior; and

provide the first user guidance about the first user's behavior based at least in part upon the first user behavior model.

12. An apparatus according to claim 11, wherein the processor is further configured to:

compare behavior of the first user over a first period of time to the first user behavior model to determine whether the first user's behavior over the first period of time deviates from the first user's average behavior over a longer period of time; and

wherein the processor is configured to provide the first user guidance by notifying the first user when the first user's behavior over the longer period of time deviates from the first user's behavior over a first period of time.

13. An apparatus according to claim 11, wherein the processor is further configured to:

compare the first user behavior model to a community behavior model representative of an aggregate community behavior for a plurality of users of the social service based at least in part upon an aggregation of the behavior of the plurality of users of the social service to determine whether the first user's behavior deviates from the community behavior; and

wherein the processor is configured to provide the first user guidance by providing the first user guidance based at least in part upon the comparison between the first user's behavior and the community behavior.

14. An apparatus according to claim 11, wherein the processor is further configured to:

compare the first user behavior model to a community behavior model representative of an aggregate community behavior for a plurality of users of the social service based at least in part upon an aggregation of the behavior of the plurality of users of the social service to determine whether the first user's behavior deviates from the community behavior; and

wherein the processor is configured to provide the first user guidance by providing the first user guidance based at least in part upon the comparison between the first user's behavior and the community behavior.

15. An apparatus according to claim 11, wherein the processor is further configured to:
providing the first user guidance about how other users of the social service perceive the first user.

16. An apparatus according to claim 11, wherein the processor is configured to provide the first user guidance by providing the first user guidance about an action in which the first user is engaging on the social service to enable the first user to maintain a consistent identity on the social service based at least in part upon the first user behavior model.

17. An apparatus according to claim 11, wherein the processor is configured to provide the first user guidance about the first user’s behavior by providing the first user guidance when the first user’s behavior risks disclosing an identity of the first user.

18. An apparatus according to claim 11, wherein the processor is further configured to:
mine information provided to the social service by a second user of the social service to identify information provided about the first user;
determine whether any of the information provided about the first user is false based at least in part upon the first user behavior model; and
notify the first user of the presence of false information about the first user on the social service.

19. An apparatus according to claim 11, wherein the processor is further configured to:
maintain at least one of a second behavior model representative of a second user’s behavior on the social service or a third behavior model representative of an aggregate community behavior for a plurality of users of the social service based at least in part upon an aggregation of the behavior of the plurality of users of the social service; and
provide the first user with advice on how to behave in a social interaction on the social service based at least in part upon at least one of the second behavior model or the third behavior model.

20. An apparatus according to claim 11, wherein the processor is further configured to:
monitor a second user’s behavior on the social service;
generate a second user behavior model representative of the second user’s behavior on the social service based at least in part upon the second user’s monitored behavior;
generate a bot configured to simulate the second user based at least in part upon the second user behavior model; and
provide the first user a simulated interaction with the second user using the bot.

21. An apparatus according to claim 11, wherein the social service comprises a multi-player gaming service, and wherein the processor is further configured to:
monitor a second user’s behavior on the multi-player gaming service;
generate a second user behavior model representative of the second user’s behavior on the multi-player gaming service based at least in part upon the second user’s monitored behavior;
compare a recent action of the second user to the second user behavior model to determine a predicted future action of the second user; and
provide the first user with advice based at least in part upon the predicted future action of the second user.

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