IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PROVISIONAL APPLICATION FOR PATENT

FOR

System and Methods for Generating Insight, Predicting Behavior, and Encouraging Presence for Individuals and Groups through Personal Data Aggregation

BY

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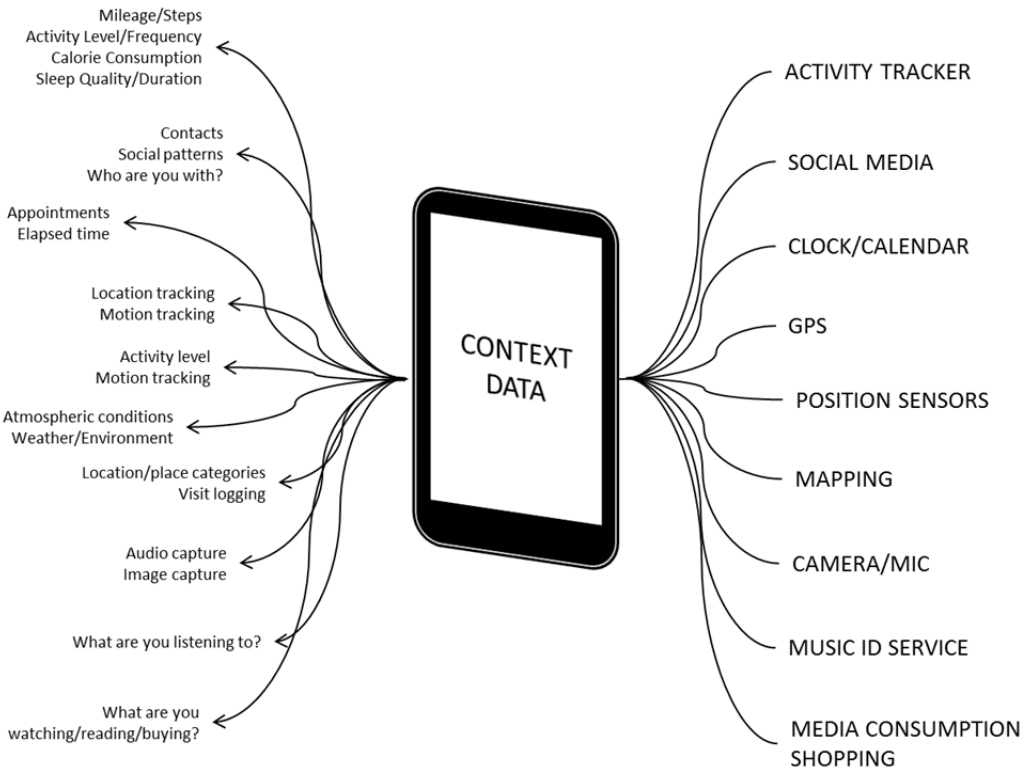
[0001] Embodiments of the inventive concepts disclosed herein are directed to a system for correlating diverse input streams of data collected via a smartphone, smartwatch, mobile device, or intelligent device, synthesizing the diverse streams of data into a coherent, portable, quantified self, and tools for analyzing the resulting aggregation of personal data to the benefit of its owner. "Intelligent devices" or "Things" as used herein refers to devices commonly associated with the "Internet of Things," including (but not limited to) sensing or monitoring devices, automation systems, ingestible or imperceptible devices, and RFID-enabled or addressable devices and systems configured for the collection, reception, and/or communication of data via Internet link.

[0002] Smartphones have become for many individuals computing tools of first resort that can be equipped (via installable applications or connectible peripherals) to organize daily appointments; capture and share high quality images and audio; or determine the user's location anywhere on earth to within meters. Smartphones and their associated peripherals (e.g., wearable sensing devices) can collect diverse and comprehensive data streams about their users: where the user goes, and for what purpose; the user's level of physical activity throughout the day; and the user's vital statistics, such as heart rate and body temperature. The user may engage these applications or peripherals in the name of self-improvement: for example, the user wants to become thinner, to become more physically active, to reduce stress levels, or to achieve financial stability.



[0003] However, such a technologically assisted journey toward self-improvement may lead to unexpected consequences that detract from or even frustrate the user's goals. For example, diverse data streams may accumulate beyond the user's access to them, and thus beyond the user's ability to gain meaningful insight from them. "Hard" data streams captured by wearables or other intelligent

devices include biological or environmental data that may paint an accurate representation of a constructed, quantified self. However, these data cannot lend insight if they are islanded, inaccessible, or non-searchable. For example, a user may be aware intuitively that his/her heart rate rises and falls at various points throughout the day; the user may even feel that there is a pattern to the rising and falling, or that heart rate can be associated generally with certain feelings or states of being. However, if the user has no way of observing heart rate data over time, or has no way of correlating heart rate data with other relevant factors (e.g., associating a spike in heart rate with a particularly traumatic or exciting moment), the data are of little use in lending the user perspective on the role played by heart rate in his/her daily life.

[0004] Consumer-grade applications and platforms, such as Apple's ResearchKit platform, can crowdsource targeted research data from anonymous individual users. Research institutions may use the open-source ResearchKit platform to design applications for gathering targeted research data via the collection of motion tracker data from onboard sensors combined with additional content manually entered by each individual user. For example, the AsthmaHealth application developed by Mount Sinai combines location-based air quality data and step data (tracked by the onboard motion processor or by connected peripheral devices, e.g., through an application integration platform such as HealthKit) with manually input personal data relating to the frequency of asthmatic symptoms, controller/inhaler usage, triggers and peak flow, ER/hospital visits, and medication changes. The mPower application developed by Sage Bionetworks for Parkinson's disease research gamifies the mobile device's onboard gyroscope through diagnostic tests that measure the gait, balance, dexterity, or memory of the user. GlucoSuccess developed by Massachusetts General Hospital correlates step data with individualized blood glucose levels entered by the user. Share the Journey, developed by Sage Bionetworks, correlates activity data with detailed information provided by each user about their symptoms and mood to gather information about the long-term effects of chemotherapy on breast cancer patients. MyHeart Counts, developed by Stanford University, correlates activity and sleep data

with individualized survey data about diet and lifestyle to assess the user's risk of cardiovascular disease.

[0005] While these applications (and likely other such applications to follow) present new opportunities for data collection, they do not appear to fundamentally change the relationship between user, data, and device. ResearchKit applications are first and foremost research tools designed to fulfill specific research objectives by crowdsourcing data and maximizing sample sizes of individual users, each user providing similarly specific data tailored to those objectives. In each of the above examples, the collection of data is generally high-friction, requiring a significant degree of active participation by the user. Furthermore, the anonymity of individual users is preserved in order to encourage participation. However, this would appear to leave little opportunity for individualized reflection or feedback based on the user's own personal health information, as opposed to generalized notifications or educational programming related to the prevention or management of a particular disease or condition. While each user makes contributions to research in the form of information and attention, it is unclear whether the user receives any perspective on his/her own data in return.

[0006] In addition, the versatility of the smartphone as personal portal may foster a dependent relationship; smartphone applications absorb the user's attention and time without providing perspective in exchange. "Soft" data streams, such as those generated by the user's interaction with social media platforms such as Twitter or Facebook, may be perceived by the user as a reflection of the actual self. These data streams, however, represent a"constructed self" in the sense of an idealized persona "constructed" from only those aspects of the self the user wishes others to see. Therefore, such a "constructed self" represents neither as comprehensive nor as accurate a "self" as the user may believe. Furthermore, while social media platforms may offer the promise of universal connection with anyone, anywhere, at any time, the promise of this "connection" may come at the expense of, or detriment to, real-life connections with the user's organic network of relatives, friends, co-workers or neighbors (in other words, flesh-and-blood human beings). The user may feel

uncomfortable or even distressed at the prospect of being "disconnected", even if this "disconnection" is only temporary and for entirely valid reasons which demand the user's undistracted attention (e.g., driving to work, sleeping, interacting with friends and family). Furthermore, applications or platforms installed on a smartphone with the best of intentions may depend on shaming the user into compliance, or forcing the user to conform to a predetermined pattern of behavior, based on the promise of future success. In either case, greater distress may result if the user finds him/herself unable to model behavior to meet the demands imposed by the application or platform, or unable to attain an arbitrary standard of perfection.

[0007] It may therefore be desirable to provide a means for aggregating the numerous and diverse data streams accessible through one or more mobile devices, intelligent devices, systems, platforms, or other "Things", and organizing these data streams in a way that returns to the user a meaningful perspective from which to view the data, while minimizing the attention taken in exchange. It may also be desirable to aggregate personal data streams toward the synthesis of a quantified self, unique to each user, that is at once comprehensive, accurate, portable, and kind. In other words, the user can reflect upon the data that represent his/her life experience, gaining insight and perspective from the data without being overwhelmed by their size or complexity. Furthermore, a portable aggregation of data streams gives the user not only ownership, but possession of the data that define him/her. It may also be desirable to provide a frictionless or ambient means of aggregating data from diverse streams that neither distracts, interrupts, nor upsets the user's life experience. It may additionally be desirable to provide, through the unification and aggregation of personal data streams, a means for helping individuals and groups to realign their relationships with connected digital systems in a way that empowers these individuals and groups to marshal those systems as resources to enhance their well-being (as individuals, as families and peer groups, or as communities and societies) as opposed to fostering user dependence on those systems.

[0008] Embodiments of the inventive concepts disclosed herein are directed to a system compatible with portable, wearable, and other connected devices such as

smartphones or smartwatches, ingestible or digestible devices, imperceptible devices, identifying environmental devices or systems, and intelligent devices or systems. In one embodiment, a platform installed on a mobile device (or similar appropriate device) initiates a data collection session when a display screen of the device is activated. For example, the user of a smartphone checks his/her phone, triggering a session. In one embodiment, only deliberate activations of the display screen (e.g., activations caused by the user checking his/her phone) trigger a session. For example, if the screen is temporarily activated by receipt of a notification, a session may not be triggered. In one embodiment, the system continues to collect data when the display screen is inactive, provided the device itself is powered.

[0009] In one embodiment, upon generating a session the system attempts to determine a value for any accessible data points, adding the values corresponding to those data points to the session. For example, the system may collect data from one or more installed or connected applications, platforms, devices and systems. The system may determine a location of the session via GPS or other location sensor of the mobile device, or via a location-based platform such as Foursquare or Swarm. A location may be a known address associated with a particular place (the user's home, the user's workplace, or some other formally defined space), or a location may be represented by coordinates (e.g., GPS/GNSS) corresponding to a location on earth. The system may determine a time for generation of the session based on a clock of the mobile device. The system may determine an activity level of the user and associate the activity level with the session. A user may, for example, be defined as active, static, traveling, or absent (i.e., using the phone) depending on the information provided by one or more onboard sensors, applications, or peripheral devices coupled to the mobile device. In one embodiment, the system includes an onboarding process that requests from the user an initial level of baseline information as well as permission to access the data collected by various applications and platforms. It is contemplated that this onboarding process will be minimally intrusive. In one embodiment, the system will ask the user to define locations corresponding to their home and workplace, and to define an organic network of trusted and supportive individuals. As it is a core principle of the system to enhance

the humanity of its users rather than replace it, in the event that user data significantly differ from the norm, the system may notify these individuals rather than interfering directly with the user. It is contemplated that an organic network will be both unique to each user and small in size; for example, the ideal members of a user's organic network are not casual acquaintances but very close friends, family members, and other individuals with whom the user maintains the highest levels of mutual trust and comfort.

[0010] In one embodiment, the system infers a data point of the session, such as an activity level, based on other raw data accumulated via installed or connected applications, platforms, devices and systems. For example, upon generation of a session the system may determine that 1) position sensors indicate that the user is moving at a generally consistent speed and 2) position sensors and biometric sensors indicate that the user is not engaged in strenuous activity, such as walking or cycling. The system may therefore infer that the user is traveling (riding or driving) and indicate the user's activity level accordingly. Furthermore, if the current session location corresponds to the user's workplace and the prior session location corresponds to the user's home, the system may further infer, at a high level of confidence, that the intervening time was spent commuting to work. In one embodiment, a raw data point or inference of the system is associated with a particular confidence level. In one embodiment, the system categorizes physical activity as walking, running, or cycling. For example, the motion tracker of a mobile device carried by the user while active may associate particular sensor readings or patterns thereof as corresponding to precise types of activity, and report this information to the system.

[0011] In one embodiment, a session includes at least a time, a location, and an activity level. For example, the system may note the time of session generation, and may additionally note the time elapsed from the conclusion of the prior session. A session late at night associated with low activity, followed immediately by a session the next morning, may lead the system to infer that the user has been sleeping. In one embodiment, the system correlates this inference with biometric data, making

further inferences regarding the duration or quality of the user's sleep. For example, the system may further infer, in this case, that 1) the user slept continually through the night without being awakened or 2) the user was awakened but refrained from checking his/her phone. Both inferences represent meaningful data points that may lend additional perspective on the user's overall well-being. In one embodiment, a congruent data point such as an elevated heart rate triggers a broad variety of inferences depending on contemporaneous context data. For example, the system may note an elevated heart rate of the user (i.e., significantly above the user's observed resting heart rate) several times throughout the day. At one point, the elevated heart rate may correspond to elation or excitement, which may be correlated by the user's location, environment, or mood. At a second point, the elevated heart rate may correspond to recent (and observable) physical activity such as running or cycling. At a third point, the elevated heart rate may indicate anger, fear, or distress; e.g., the user may be currently driving and located at an intersection, and thus may have narrowly averted, or been involved in, a motor vehicle accident.

[0012] In one embodiment, the system collects data from one or more peripherals with which the mobile device is connected. For example, the system may collect additional data relevant to the user's activity level via an external pedometer or motion tracker, or collect vital statistics such as the user's pulse rate, breathing rate, or blood pressure via biometric sensors. In one embodiment, the system collects data generated externally to the mobile device via one or more application triggers (e.g., IFTTT or Zapier). For example, a user may arrange for an event to be added to an online calendar every morning when, at sunrise, the temperature is over 50 degrees and skies are clear. The event would then notify the user that weather conditions favor biking to work that morning, as opposed to driving. Subsequent motion tracker data may then indicate how often the notification resulted in a higher activity level on the user's part.

[0013] In one embodiment, the system adds any media created contemporaneously to a particular session. For example, any images captured, or

audio clips recorded, during a period when the mobile device is active will be associated with that session. In one embodiment, the system notes any metadata (e.g., location information) pertaining to captured media. For example, if a user's mobile device includes both a front-facing and a rear-facing camera, the system may note which camera was used to capture a particular image. An image captured with a front-facing camera may indicate an image captured by the user of himself or herself (i.e., a "selfie") and may, when correlated with other session data, have particular significance as opposed to an image of other persons and things captured by the user via the rear facing camera.

[0014] In one embodiment, the system associates any appointments created by a calendar of the mobile device with sessions corresponding to the time windows of the appointments. For example, user A may program a regular reminder to visit a local gym every Wednesday at 7:00 am with her friends B and C. The system may then generate a session on a Wednesday morning at 7:15 from a location corresponding to 1) A's home or 2) a local coffee shop. In both cases, the system may infer that A has missed her regular appointment at the gym, but there may be very different reasons for each absence. For example, the first case may indicate accidental oversleeping (which other data patterns may in turn explain), while the second case may indicate a lack of motivation.

[0015] In one embodiment, the system associates transactions or purchases made by the user (via the mobile device, or via another computing device of the user) with the appropriate session (e.g., cross-referenced by location or time). For example, the system may generate a session at a location corresponding to a particular restaurant. The system may then correlate the associated session with additional information about the meal purchased and its nutritional content.

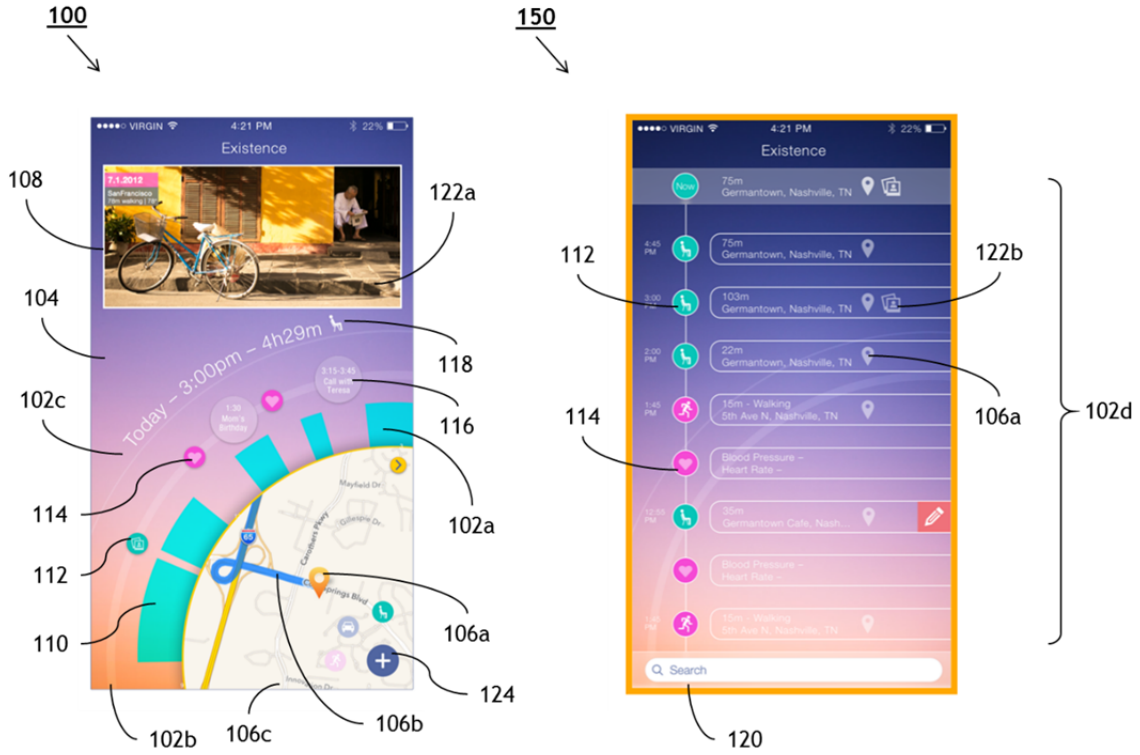
[0016] In one embodiment, the system logs comments or messages sent by the user and associates them with the appropriate session. For example, the system may note any comments or posts sent via Twitter or Facebook, or text and e-mail messages sent or received. The language and punctuation choices made in the composition of these messages, compared to the user's normal compositional style,

may indicate increased stress levels. In one embodiment, the system requests the user's permission for each individual application, platform, peripheral, and data stream to be monitored. It is contemplated generally that the broader and more diverse array of data streams accessed, the more detailed and accurate representation of the user painted by the data streams.

[0017] In one embodiment, a session and any associated data points are indexed and stored in a session index. For example, the session index may be stored in the physical memory of the mobile device or partially/fully server-based or cloud-based. The session index may be updated at fixed intervals (e.g. hourly), or upon conclusion of each session. In one embodiment, the system includes a search function allowing the user to search or view portions of the session index according to chronological or non-chronological parameters. For example, the user may wish to search the session index for common periods of activity or visits to a particular location.

[0018] In one embodiment, the system periodically analyzes the data in the session index to quantify the user's life experience and make inferences about the user's present and future well-being. For example, the system may assess on a daily or weekly basis the amount of time the user has spent in each of several activity states (active, static, traveling, or absent) or the amount of time at a given location (home vs. work vs. some other frequently visited location).

[0019] In one embodiment, the system generates one or more visualizations for display based on its analysis of the data within the session index. For example, one or more visualizations in combination may define the default screen 100 seen by the user when opening an application of the system via his/her mobile device.



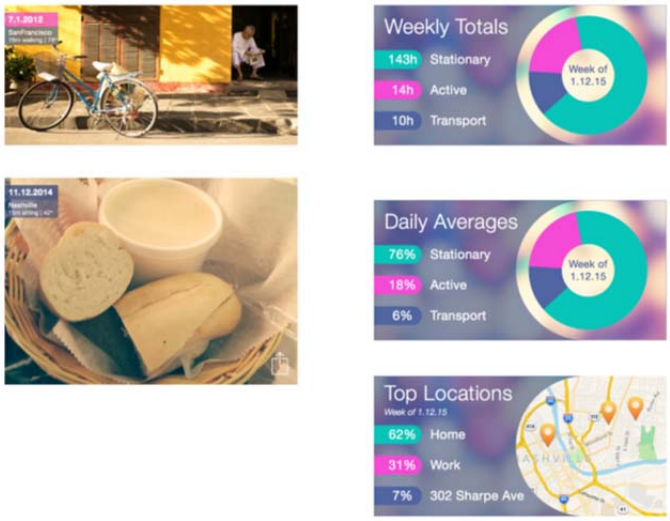
[0020] Default screen 100 may include several variations of a visualization 102 corresponding to a particular time window. In one embodiment, as the system logs sequential sessions, each session corresponding to a particular time window, the system may assign a color to each session (corresponding to the activity level associated with each session) and display a visualization 102a corresponding to all sessions created within the selected time window (e.g., the preceding six hours). For example, visualization 102a may designate a "static" period 110 as light blue and an "active" period as red. "Absent" periods may be left blank, to indicate to the user how much time and attention has been spent in this state. In one embodiment, toggle 124 allows the user to filter the information displayed by visualization 102a. For example, the user may select a visualization 102a that displays, for a given time window, only red slices corresponding to active periods, only light blue slices 110 corresponding to static periods, or only dark blue slices corresponding to traveling periods.

[0021] In one embodiment, the user may adjust the size of the time window displayed, as well as the corresponding duration. In one embodiment, rotating the

displayed visualization 102a (e.g., via touch-screen) causes the system to display a visualization 102a corresponding to a future time window, cross-referenced with predictive inferences made by the system about the user's likely activity during that future time window (based on prior sessions corresponding to that time of day). For example, if the current time is 2:00 pm, the user may elect to view a visualization of the period between 4:00 pm and 10:00 pm that night, populated with data corresponding to the user's likely activity that night (based on previous sessions collected between the hours of 4:00 pm and 10:00 pm).

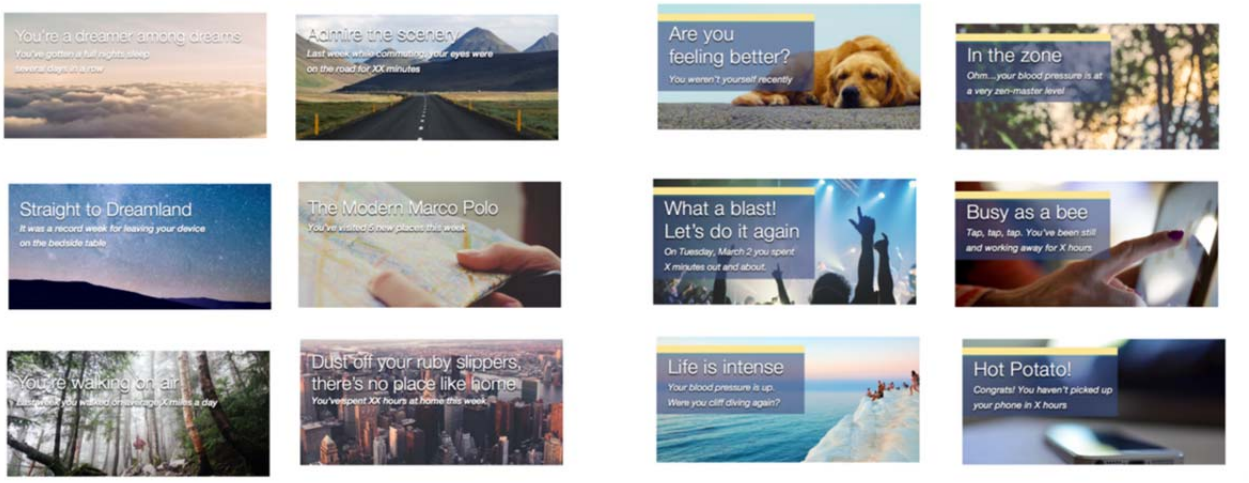
[0022] In one embodiment, the system displays a visualization 102b corresponding to the same time window as visualization 102a, but populated with other data from the corresponding sessions. For example, visualization 102b may include captured images 112, biometric data 114, or calendar appointments 116. In one embodiment, the system displays a visualization 102c corresponding to the same time window, but summarizing the total elapsed time spent in a particular activity state (for example, 4 hours 29 minutes of a 6-hour time window spent static or inactive 118). In one embodiment, the system displays a visualization 104 corresponding to current atmospheric conditions. For example, the background coloring 104 of default screen 100 may change depending on the current weather (clear, cloudy, overcast). In one embodiment, visualization 104 may further correspond to the time of day (sunrise, sunset, darkness).

[0023] In one embodiment, the system displays a visualization 106 corresponding to location data associated with one or more sessions. For example, visualization 106 may include the user's current location 106a, a path 106b connecting the current location 106b with one or more prior locations, and a scalable map 106c of the surrounding area. The path 106b may additionally be colored to match the corresponding activity state (e.g., depending upon whether the user reached his/her present location by walking/biking [active] or by riding/driving [traveling]).



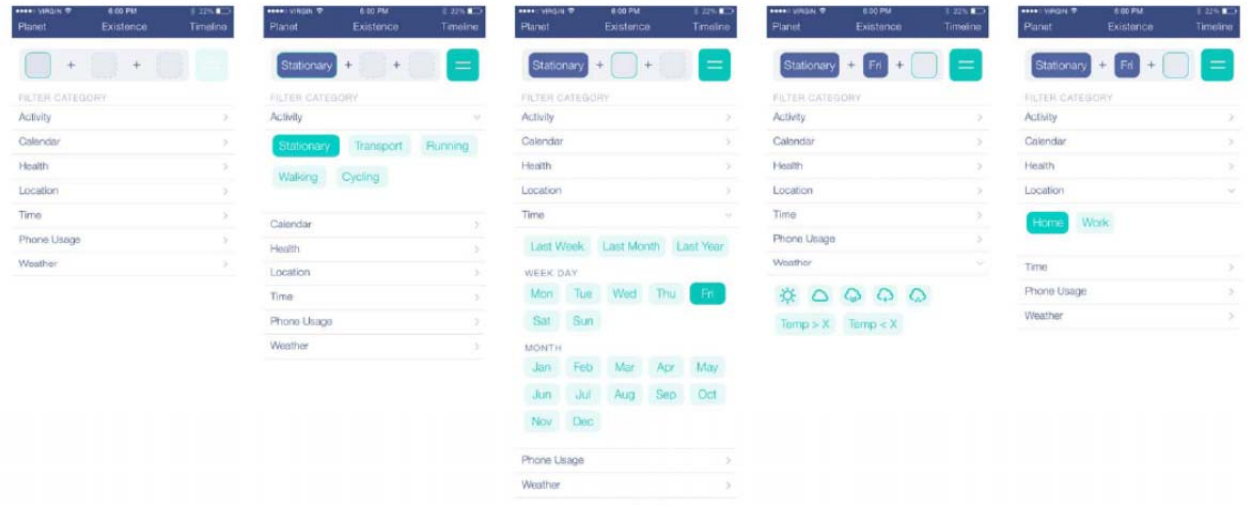
[0024] In one embodiment, the system displays a visualization 108 based on analysis of session data and/or inferences based thereon. For example, visualization 108 may include a previously captured image 122a selected from the user's session index. It is contemplated that the selection and presentation of data components, images, and messages in a visualization 108 is generally kairotic in nature. For example, the system may select a particular image for presentation at a particular time based on other data points associated with that image in order to suggest a particular response in the user, subtly encouraging the user toward beneficial behaviors without imposing upon the user a fixed path toward such behaviors or a pattern to which the user must conform.

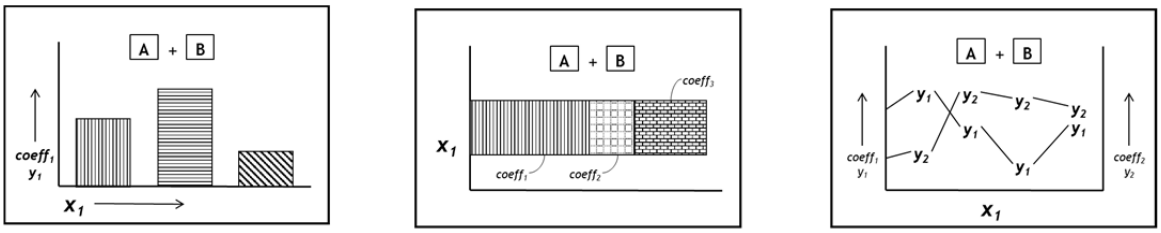
[0025] In one embodiment, visualization 108 includes a summary of session data. For example, visualization 108 may display a graph or chart summarizing the user's total time in a given activity state over the past week or the user's average daily breakdown of activity for the past week. Visualization 108 may summarize the user's time according to location (home vs. work vs. somewhere else), or according to other parameters plotted against time. In one embodiment, visualization 108 may include both macro-scale and micro-scale summaries of session data.



[0026] In one embodiment, the system displays a visualization 108 when the user reaches or surpasses a predetermined milestone or goal. For example, visualization 108 may note a particular milestone, e.g., getting a full night's sleep several nights in a row, restraining from checking the phone while driving, or visiting new locations. In one embodiment, visualization 108 includes a message based on inferences drawn by the system according to multiple data points. For example, if the system observes significantly high or significantly low blood pressure, a message may be generated and displayed invoking similarly exhilarating or calming experiences.

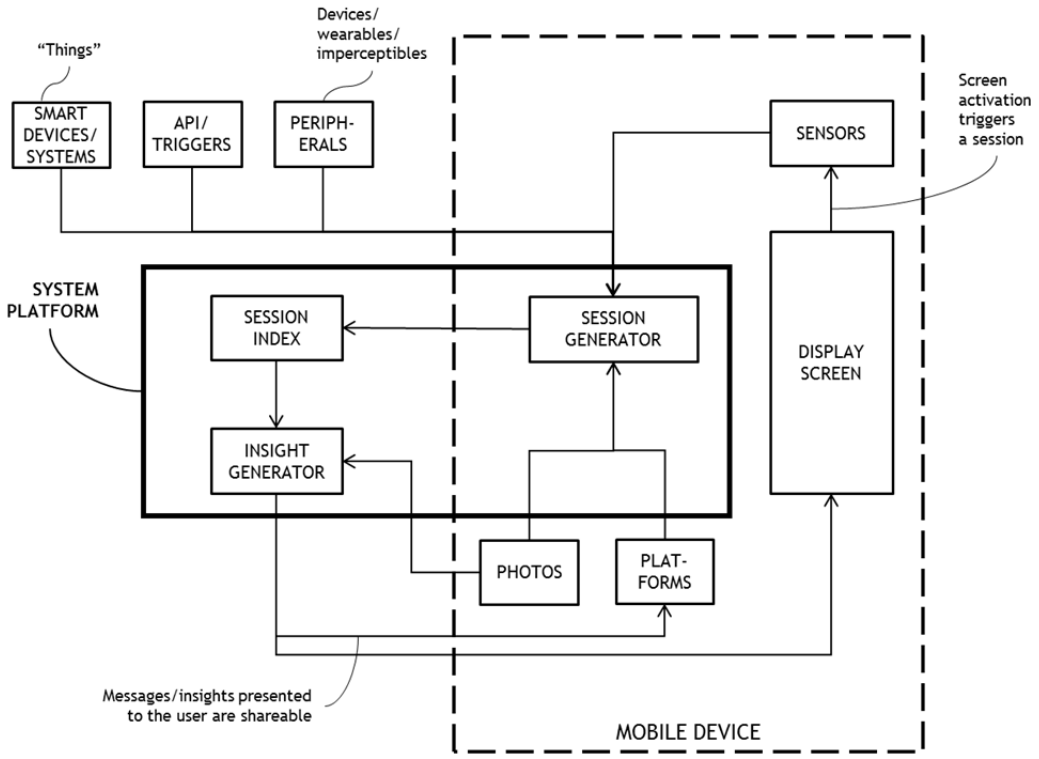
[0027] In one embodiment, the system displays an alternate screen 150 including a visualization 102d corresponding to a time window in the form of a timeline. For example, visualization 102d may display a chronological sequence of sessions corresponding to a time window, including locations 106a, activity states 112, biometric data 114, and captured images 122b. In one embodiment, visualization 102d includes a search window 120. For example, the user may wish to search session data according to a defined time window (e.g., yesterday, last week) or according to non-chronological parameters, (e.g., visits to a particular location, instances of a particular activity state or mood). In one embodiment, the user can access additional data points associated with a particular session, such as locations 106a or captured images 122b, through visualization 102d.





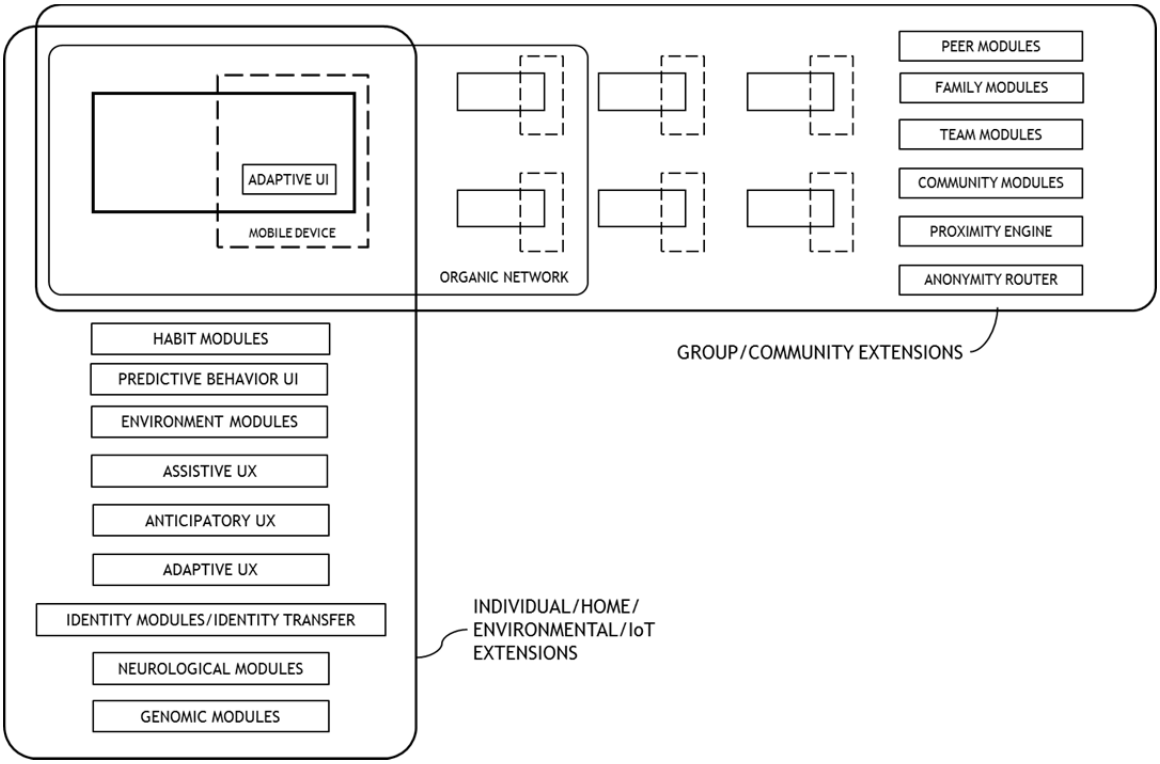
[0028] In one embodiment, visualization 102 includes user-generated search results and/or metrics based on variables or coefficients indicated by the user. For example, the user may wish to recall specific time periods, moments, moods, locations, etc., by identifying specific instances within his/her session index. Searchable parameters may include locations, weather conditions or events, activity levels, health parameters (e.g., vitals, heart rate, blood pressure, sleep data, and falls as reported by HealthKit or similar platforms or devices), The system may then allow the user to search with increasing precision by cross-referencing additional search filters, e.g., all instances associated with stationary behavior, on Friday afternoon, at the user's workplace, when the weather was sunny and warm. The user may additionally plot sums, averages (means/medians/modes), maxima/minima, and counts of selected variables. In one embodiment, a user-selectable data visualization includes at least one of timeline, a time series, a connected scatter, a Gantt chart, a pie chart, a circumplex chart, a histogram, a tag cloud, a bar chart, a line chart, a heatmap, an area chart, or a waterfall chart.

[0029] In one embodiment, the system generates a portable data file (e.g., CSV or similar tabular/plaintext form) for download by the user at his/her request. For example, the user may wish to port his/her session index data to other formats, e.g., for viewing or processing in spreadsheet form.



[0030] It is contemplated that embodiments of a system according to the inventive concepts disclosed herein may empower individual users to construct a quantified, qualitative, and accurate representation of their own life experiences, and by doing so gain insights into the users' life experiences, and the behaviors that shape them, that might otherwise be obscured. For example, the user may intuitively understand what it means to "know yourself" or to "not feel like yourself," but this intuitive understanding may be difficult or impossible to accurately or objectively express to others (e.g., the user's physician or care provider). Furthermore, it follows that an intuitive understanding of the self, difficult to quantify, can be equally difficult to manipulate. Embodiments of a system according to the inventive concepts disclosed herein may lend quantitative insight into the precise data points, and patterns thereof, associated with particular feelings (i.e., the observable factors

that contribute to those feelings, or to the deviation of session data from the norm, or) and how the user can manage these patterns (and by extension, their own life experiences) more effectively. It is further contemplated that this process will lend the user additional perspective as to his/her own relationship with mobile devices as well as the diverse digital systems for which those devices serve as personal portals.



[0031] It is contemplated that embodiments of a system according to the inventive concepts disclosed herein may extend the user's perspective to additional aspects of his/her life experience, not only as an individual but as a member of a larger social group. For example, a system according to embodiments of the inventive concepts disclosed herein may prompt the user (e.g., during an initial onboarding phase) to define an organic network unique to the user. This organic network may comprise a small, core group of highly trusted friends or family members. If, for example, the user's session data deviate significantly from the norm over a time window, the system may infer that the user is "not himself"/"not herself" or, more precisely, may not be feeling well for a variety of reasons that may or may not be apparent from session data. The system may then notify a member of the

organic network, prompting that individual to check in on the user (to offer support and encouragement, or simply to be present for the user).

[0032] In one embodiment, the system includes an adaptive user interface (UI) configured to modify the user interface (UI) of a mobile device, automation system, or intelligent device according to inferences drawn from session data. For example, the system may infer (e.g., from elevated blood pressure, heart rate, etc.) that the user is currently experiencing high levels of stress. The system may therefore automatically reduce the brightness level of the screen of the user's mobile device, lower volume settings, or make other temporary adjustments to accommodate the user's mood until session data indicate that the user has returned to a more normal, less stressful state.

[0033] In one embodiment, the system is configured to connect to, and communicate with, a physical environment (e.g., the user's home or office) comprising intelligent devices, "Things", or automation systems (e.g., Apple's HomeKit home automation system). For example, if the user is commuting home from work, the system may adjust interior lighting, climate control, window coverings, noise levels, and other environmental factors according to the user's mood. In one embodiment, the user may adapt the system to customize a particular environment according to predetermined parameters. For example, if the user is expecting members of his/her extended family to visit over the holidays, the user may customize the system to preprogram the home environment during that period of time in anticipation of multiple considerations: 1) the relatives may be older (e.g., the user's parents) and thus more comfortable in an environment warmer and calmer than normal; 2) the user may be under increased stress levels. The system may then adjust environmental factors in various rooms throughout the house accordingly (e.g., guest bedroom vs. master bedroom vs. common areas). In one embodiment, the system will work in concert with an environmental automation system and/or connected group of intelligent devices and systems to generate a multi-sensory simulated environment or reproduction of a remote environment (e.g., generating visual imagery, ambient sound, temperature, etc. corresponding to an outdoor

location inside an interior space) based on aggregated sensor data, the detail and accuracy of the reproduction based on the volume and/or precision of the collected data. In one embodiment, the system is configured to download an environment module comprising component settings, subroutines, and personalized programming configured to simulate one or more desired environments via one or more intelligent devices or automation systems of the user.

[0034] In one embodiment, the system may be customized to assist the user in achieving specific, defined wellness goals. For example, the user may wish to improve the duration or quality of sleep, quit smoking, or build a financial nest egg for retirement. The system may then adjust the selection of visualization materials or behavior inferences with these goals in mind, offering subtle and directed encouragement to the user without imposing a restrictive program. In one embodiment, the system may additionally customize the home or another "smart" environment to coordinate the user's surroundings for optimal support (e.g., accounting for likely heightened stress levels, sleeplessness, and/or increased appetite during the initial period of a stop-smoking subroutine). In one embodiment, the system may be customized to assist the user in learning particular habits and behaviors in addition to achieving external wellness goals. For example, a downloadable "habit" may include device settings, subroutines, targeted and personalized messaging or programming, and other components designed to coordinate the user's natives devices, systems, and environments to assist the user in adapting the desired behavior.

[0035] In one embodiment, the system encourages the user to pursue targeted wellness goals through organic networks of peers or proximate individuals best able to assist the user. It is contemplated that the wellness objectives of individual users may sometimes be best served anonymously, as some users may be reluctant to seek assistance (or to sample new and unfamiliar experiences) within their own organic networks, or among their regular social or workplace orbits (friends, co-workers). Accordingly, the system may connect users interested in pursuing particular goals to proximate coaches (individuals capable of assisting the users in achieving said goals,

or proximate peers with shared interests) according to parameters configured to preserve one or more levels of anonymity, so that the users may enhance their well-being without the fear of social consequence that might otherwise hinder their progress. For example, peers may be determined based on a combination of geographic proximity, shared or like interests, shared or like conditions, or desired skills and talents. In one embodiment, the system may ensure multiple degrees of anonymity between a user and a potential peer. For example, the system may attempt (via reviewing the user's social networks, organic networks, and other documented connectivity) to ensure that user A and peer B are separated by at least three levels, i.e., user A's network of contacts includes no individual B, B being connected to (ex.—acquainted with) an individual C, C in turn being connected with any member D of B's network of contacts.

[0036] In one embodiment, the system is configured to generate and display visualizations and messages based on predictive inferences anticipating the user's behavior according to session data. For example, the system may determine that the user is present at a restaurant which the user has visited several times in the past, and that the user's reaction to dining there 1) has included a broad variety of menu selections and 2) has been generally favorable and associated with pleasant or elevated moods. The system may then ask the user if s/he wants to sit at the same table as last time. In one embodiment, the system will ask the user for feedback on the accuracy of predictive inferences, and use this feedback to improve future inferences. It is contemplated that the larger the user's session index (i.e., the more data accumulated by the index, and consequently the more finely detailed the "identity" corresponding to the user's behavior and experience), the larger the system's knowledge base and consequently the greater the system's capacity to infer, predict, and "learn" from the user's life experiences.

[0037] In one embodiment, the system is configured for operation by individual members of a group. For example, the system may tailor its analysis and presentation to foster mutual trust and harmonious intrapersonal interaction among a small group (e.g., a workplace team, a close or extended family, a peer group of individuals with

shared interests) or a larger group (e.g., a neighborhood or community). In one embodiment, the system may be customized by one or more users to assist members of the group in learning or adapting one or more desired behaviors or habits, or in the achievement of one or more defined common goal.

[0038] It is contemplated that the user identity associated with the session index of a particular user, i.e., an identity constructed of, corresponding to, or defined by user behaviors, may include a portable representation of the user identity (e.g., a digital avatar) for use as a login or other documented identity for gaining access to websites, payment portals or terminals, and physical locations. For example, the user may connect to security systems, medical systems, financial systems, and other interconnected systems or intelligent environments using a representation of the user's behavioral identity in the same way the user would login to a website, portal, or network with a login ID associated with a Twitter, Facebook, or other social media account. In one embodiment, an RFID tag, QR code, or similar identifier is generated as a scannable or electronically detectable link to the user's behavioral identity, with which the user may gain access to restricted physical locations or payment portals.

[0039] It is further contemplated that, as the accuracy of portable sensing equipment improves, the variety and types of data points incorporated in a user's session data will broaden, as will the inferences the system is able to draw based on session data. For example, an embodiment of the system may incorporate indexing, review, customization, or modification of a microbiome or genome of the user.

CLAIMS

We claim:

1. A system for assessing the activity of a user, comprising:

at least one mobile device associated with the user and having at least one display surface, the at least one display surface configured to transition between an active state and an inactive state, the mobile device programmed to

(a) generate at least one session, the at least one session associated with an active state;

(b) associate with the at least one session at least one data point received from at least one of a sensor, a platform , and a peripheral device;

(c) store the at least one session in a session index of the mobile device;

(d) generate at least one visualization based on the at least one session; and

(e) display the at least one visualization to the user via the at least one display surface.

2. The system of claim 1, wherein the at least one data point includes at least one of:

a first time associated with the generation of the session;

an activity level of the session;

a second time of the session, the second time associated with an elapsed time since the last transition between the active state and the inactive state;

a location of the session;

an image associated with the session;

an audio signal associated with the session;

a biometric data point associated with the session;

a constructed self element generated by the user;
a calendar event associated with a calendar of the mobile device;
an atmospheric condition of the session; and
a transaction associated with the session; and
a data point associated with at least one application trigger.

3. The system of claim 1, wherein the at least one data point includes at least one data point generated while the at least one display surface is in an inactive state.

4. The system of claim 1, wherein the activity level is at least one of active, static, traveling, walking, running, cycling, and absent.

5. The system of claim 1, wherein the calendar event includes at least one of a start time, a duration, a location level, a purpose, and an attendee.

6. The system of claim 1, wherein the location includes a location identifier corresponding to at least one of a home, a workplace, and a third location.

7. The system of claim 1, wherein the biometric data point includes at least one of a pulse rate, a temperature, a blood pressure, a blood substance level, a sleep stage, and a diagnostic result.

8. The system of claim 1, wherein the atmospheric condition includes at least one of a temperature, a humidity level, a substance level, a pressure level, and a noise level.

9. The system of claim 1, wherein the constructed self element is associated with at least one of a text message, an e-mail message, a post to a social media platform, or an audio signal.

10. The system of claim 1, wherein the peripheral device includes at least one of a handheld device, a wearable device, an ingestible device, an identifying environment component, an imperceptible device, an Internet-connected intelligent device, an RFID-enabled device, an addressable device, an intelligent system, and an automation system.

11. The system of claim 1, wherein the at least one mobile device further includes a user interface configured to adjust at least one aspect of the at least one mobile device based on the at least one data point.

12. The system of claim 11, wherein the at least one aspect includes a brightness level, a volume level, a font size, or a color scheme.

13. The system of claim 1, wherein the at least one visualization includes:

a first visualization corresponding to a time window;

a second visualization corresponding to at least one of a time and an atmospheric condition;

a third visualization corresponding to at least one location;

a fourth visualization corresponding to at least one announcement based on one or more data points;

a fifth visualization configured to allow the user to search the session index according to at least one search parameter associated with the at least one data point;

14. The system of claim 13, wherein the time window corresponds to at least one of a portion of a day and a portion of a week.

15. The system of claim 13, wherein the time window includes a future time window.

16. The system of claim 13, wherein the third visualization includes a path connecting the current location and at least one prior location.

17. The system of claim 13, wherein the fourth visualization includes an inference based on an analysis of at least two data points.

18. The system of claim 17, wherein the inference is a predictive inference.

19. The system of claim 17, wherein the fourth visualization includes an image associated with at least one session of the session index.

20. The system of claim 1, wherein the at least one mobile device is further configured to transmit the at least one announcement to at least one person selected by the user.

21. The system of claim 1, wherein the at least one mobile device is further configured to transmit the session index to the user.

22. The system of claim 13, wherein the at least one search parameter includes a maximum, a minimum, a mean, a median, a mode, a coefficient, a variable, and a sum.

23. The system of claim 22, wherein the at least one variable includes a location, a calendar event, an activity level, a state of the at least one display surface, an atmospheric condition, a time, and a health parameter.

24. The system of claim 23, wherein the health parameter includes at least one of a heart rate, a sleep condition, a fall, a height, a weight, and a blood pressure.

25. The system of claim 13, wherein the fifth visualization invludes at least one of a timeline, a time series, a scatterplot, a Gantt chart, a pie chart, a circumplex

chart, a histogram, a tag cloud, a bar chart, a line chart, a heatmap, an area chart, and a waterfall chart.