

SYSTEM AND METHOD FOR DETERMINING LIFESTYLE REGIME

TECHNICAL FIELD

The present disclosure relates generally to providing assistances to stay healthy; and more specifically, to systems and methods for determining
5 lifestyle regime for users.

BACKGROUND

Over the years with change in lifestyle, people have become prone to several diseases such as metabolic disorders. Generally, patients with diseases like diabetes require continuous diagnosis and assistance to stay
10 healthy. Typically, diabetic patients regularly visit doctors for assistances that includes medical and lifestyle recommendations to maintain a healthy blood glucose level.

Conventionally, lifestyle recommendations are based on inputs provided by the patient. Such inputs include information such as nutrients
15 consumed, calories burnt, steps walked, physiological condition and the like. However, the conventional process of providing lifestyle recommendations is largely dependent on the patients manually providing or inputting the information. Therefore, such technique of providing lifestyle recommendations is inherently flawed as it is
20 dependent on manual intervention of the patients. Consequently, the process of generating the lifestyle recommendations is inefficient and ambiguous. Moreover, readings from electronic device, used to monitor the physiological conditions of the patients are manually provided or entered to generate lifestyle recommendations. For example, electronic
25 device such as glucometer are used to measure blood glucose level in the patient. However, operating such conventional electronic device is cumbersome. For example, the conventional glucometer requires large electric batteries making the glucometer bulky and unfriendly. Moreover,

the conventional glucometer displays information in a condensed form owing to the small size of its display.

Therefore, in light of the foregoing discussion, there exists a need to overcome the aforementioned drawbacks associated with providing life style recommendation to the user.

SUMMARY

The present disclosure seeks to provide a system for determining a lifestyle regime for a user. The present disclosure also seeks to provide a method for determining a lifestyle regime for a user. The present disclosure seeks to provide a solution to the existing problem of determining lifestyle regime based on manual intervention by the user. An aim of the present disclosure is to provide a solution that overcomes at least partially the problems encountered in prior art, and provides system for determining lifestyle regime with least dependency on manual intervention.

In one aspect, an embodiment of the present disclosure provides a system for determining a lifestyle regime for a user, the system comprising:

- a user device comprising a user agent module, wherein the user agent module is configured to generate a user interface to be displayed on a screen of the user device, and receive user input data from the user;
- a blood glucose measuring device communicably coupled to the user device for operation, wherein the blood glucose measuring device comprising
 - an electronic strip port for generating an electronic signal based on an electrochemical reaction occurring on a biochemical strip removably coupled therein;
 - a temperature sensor for sensing ambient temperature; and

a control unit configured to compute a blood glucose level based on the electronic signal received from the electronic strip port and the ambient temperature received from the temperature sensor, wherein the control unit is further configured to provide the user device with the blood glucose level to be displayed on the user interface; and

- a data aggregating arrangement communicably coupled to the user device for receiving the blood glucose level and the user input data provided by the user agent module, and to process the blood glucose level and the user input data using one or more algorithms to determine the lifestyle regime for the user and display the lifestyle regime on the user interface of the user device.

In another aspect, an embodiment of the present disclosure provides a method for determining a lifestyle regime for a user, the method being implemented via a system comprising:

- a user device comprising a user agent module, wherein the user agent module is configured to generate a user interface to be displayed on a screen of the user device, and receive user input data from a corresponding user;
- blood glucose measuring device communicably coupled to the user device for operation, wherein the blood glucose measuring device comprising
 - an electronic strip port for generating an electronic signal based on an electrochemical reaction occurring on the biochemical strip removably coupled therein;
 - a temperature sensor for sensing ambient temperature; and
 - a control unit configured to compute a blood glucose level based on the electronic signal received from the electronic strip port, and the ambient temperature received from the temperature sensor,

wherein the control unit is further configured to provide the user device with the blood glucose level to be displayed on the user interface; and

- a data aggregating arrangement communicably coupled to the user device for receiving the blood glucose level and the user input data provided by the user agent module, and to process the blood glucose level and the user input data using one or more algorithms to determine the lifestyle regime for the user and display the lifestyle regime on the user interface of the user device.
- 10 Embodiments of the present disclosure substantially eliminate or at least partially address the aforementioned problems in the prior art, and enables an efficient and accurate determination of lifestyle regime with least dependency on manual intervention of the user.

Additional aspects, advantages, features and objects of the present disclosure would be made apparent from the drawings and the detailed description of the illustrative embodiments construed in conjunction with the appended claims that follow.

It will be appreciated that features of the present disclosure are susceptible to being combined in various combinations without departing from the scope of the present disclosure as defined by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The summary above, as well as the following detailed description of illustrative embodiments, is better understood when read in conjunction with the appended drawings. For the purpose of illustrating the present disclosure, exemplary constructions of the disclosure are shown in the drawings. However, the present disclosure is not limited to specific methods and instrumentalities disclosed herein. Moreover, those in the

art will understand that the drawings are not to scale. Wherever possible, like elements have been indicated by identical numbers.

Embodiments of the present disclosure will now be described, by way of example only, with reference to the following diagrams wherein:

5 FIG. 1 is a block diagram of a system for determining a lifestyle regime for a user, in accordance with an embodiment of the present disclosure;

FIG. 2 is a schematic illustration of an environment for determining a lifestyle regime for a user, in accordance with an embodiment
10 of the present disclosure;

FIG. 3 is an illustration of exemplary user interface of a user device, in accordance with an embodiment of the present disclosure;
and

FIG. 4 is an illustration of steps of a method for determining a lifestyle
15 regime for a user, in accordance with an embodiment of the present disclosure.

In the accompanying drawings, an underlined number is employed to represent an item over which the underlined number is positioned or an item to which the underlined number is adjacent. A non-underlined
20 number relates to an item identified by a line linking the non-underlined number to the item. When a number is non-underlined and accompanied by an associated arrow, the non-underlined number is used to identify a general item at which the arrow is pointing.

DETAILED DESCRIPTION OF EMBODIMENTS

25 The following detailed description illustrates embodiments of the present disclosure and ways in which they can be implemented. Although some modes of carrying out the present disclosure have been disclosed, those skilled in the art would recognise that other embodiments for carrying out or practicing the present disclosure are also possible.

In one aspect, an embodiment of the present disclosure provides a system for determining a lifestyle regime for a user, the system comprising:

- a user device comprising a user agent module, wherein the user agent
5 module is configured to generate a user interface to be displayed on a screen of the user device, and receive user input data from the user;
- a blood glucose measuring device communicably coupled to the user device for operation, wherein the blood glucose measuring device
10 comprising
 - an electronic strip port for generating an electronic signal based on an electrochemical reaction occurring on a biochemical strip removably coupled therein;
 - a temperature sensor for sensing ambient temperature; and
 - 15 a control unit configured to compute a blood glucose level based on the electronic signal received from the electronic strip port and the ambient temperature received from the temperature sensor, wherein the control unit is further configured to provide the user device with the blood glucose level to be displayed on the user
20 interface; and
- a data aggregating arrangement communicably coupled to the user device for receiving the blood glucose level and the user input data provided by the user agent module, and to process the blood glucose level and the user input data using one or more algorithms to
25 determine the lifestyle regime for the user and display the lifestyle regime on the user interface of the user device.

In another aspect, an embodiment of the present disclosure provides a method for determining a lifestyle regime for a user, the method being implemented via a system comprising:

- 30 - a user device comprising a user agent module, wherein the user agent module is configured to generate a user interface to be displayed on

- a screen of the user device, and receive user input data from a corresponding user;
- blood glucose measuring device communicably coupled to the user device for operation, wherein the blood glucose measuring device comprising
 - an electronic strip port for generating an electronic signal based on an electrochemical reaction occurring on the biochemical strip removably coupled therein;
 - a temperature sensor for sensing ambient temperature; and
 - a control unit configured to compute a blood glucose level based on the electronic signal received from the electronic strip port, and the ambient temperature received from the temperature sensor, wherein the control unit is further configured to provide the user device with the blood glucose level to be displayed on the user interface; and
 - a data aggregating arrangement communicably coupled to the user device for receiving the blood glucose level and the user input data provided by the user agent module, and to process the blood glucose level and the user input data using one or more algorithms to determine the lifestyle regime for the user and display the lifestyle regime on the user interface of the user device.

The present disclosure provides a system for providing lifestyle recommendations to patients. The system comprises the user device and the blood glucose measuring device. The user device is configured to receive inputs from patient and the blood glucose measuring device is configured to compute blood glucose level of the patient. The system employs the blood glucose level and the inputs from the patient to provide lifestyle recommendations to the patient. The blood glucose level is directly provided by the blood glucose measuring device to the user device without the patient manually providing or entering the blood glucose level on the user device. Consequently, the process of generating

the lifestyle recommendations by the system is efficient and accurate. The blood glucose measuring device is dependent on the user device for providing power for its operation. The blood glucose measuring device does not employ large electric batteries and thereby is compact, light in weight and portable. The lifestyle recommendations are provided to the patient in an elaborated form on the screen of the user device.

The present disclosure provides the system for determining the lifestyle regime for the user. The system is a collection of one or more interconnected programmable and/or non-programmable components configured to determine the lifestyle regime for the user. Examples include programmable and/or non-programmable components, such as processors, memories, connectors, cables and the like. Moreover, the programmable components are configured to store and execute one or more computer instructions. Throughout the present disclosure, the term 'user' as used herein refers to any entity comprising a person (i.e., human being) using the system described herein. Specifically, user refers to a patient suffering from any one of: an illness, a disease, a disorder, and an ailment. In other words, the user may be a person requiring a medical care or a person receiving the medical care or a person awaiting treatment from a physician or a person under medical supervision from a medically trained person. In an example, a user is a person generally having abnormal blood glucose levels. In such an instance, the user may be termed as a diabetic person.

Furthermore, in the present disclosure, the term regime refers to information including a scheme of conduct/ treatment that when adhered to, aids the user to maintain a healthy condition. The regime includes information related to the beginning, continuing and/or cessation of one or more activities in the everyday routine of the user. Examples of one or more activities may include engaging in physical activity, intaking of food, administering a therapeutic agent and the like. The lifestyle regime

for the user refers to information including scheme of conduct/ treatment that is maintained by the user in their everyday routine to retain or attain healthy condition. In an example, the lifestyle regime may include information of scheme of conduct/ treatment for a user having abnormal
5 blood glucose levels. In such example, adhering to scheme of conduct/ treatment may help the user attain normal blood glucose levels, such as less than 100 mg/dL (during fasting for at least eight hours) and less than 140 mg/dL (two hours after eating).

The system comprises the user device. The user device is any computing
10 device associated with (or used by) the user that is capable of enabling the user to perform specific tasks associated with the aforementioned system. Furthermore, the user device is intended to be broadly interpreted to comprise any electronic device that is used for voice and/or data communication over a communication network. Examples of user
15 device comprise, but are not limited to, cellular phones, personal digital assistants (PDAs), handheld devices, laptop computers, personal computers, smart watches and the like. Additionally, the user device comprises a memory unit, a processor, a network interface card, a connecting port and the like.

20 The user device comprises the user agent module, wherein the user agent module is configured to generate the user interface to be displayed on the screen of the user device, and receive user input data from the user. The user agent module refers to a computer program or a routine that is configured to generate the user interface to enable communication
25 between the system and the user. Furthermore, the user agent module comprises one or more routines, data structures, object classes, and/or protocols that support the interaction of the user device and the user. It will be appreciated that the user agent module invokes system-level code or calls to other software residing on the user device or other location
30 communicatively coupled with the user device to perform certain

functions, such as setting up a communication session between the user device, the blood glucose measuring device and/or the data aggregating arrangement. In an example, a user agent module is a software application that operates on any form of computing device, such as the user device, and that is capable of accessing static data or resource files stored in the user device, such as user-viewable hypertext documents.

Moreover, the user agent module when initiated or interacted with provides the user interface to be displayed on the screen of the user device. The user interface includes a structured set of user interface elements rendered on the screen of the user device. The user interface elements refer to visual objects that have a size and a position in the user interface. Examples of user interface elements include (but are not limited to) text blocks, labels, text boxes, list boxes, lines, and image windows, dialog boxes, frames, panels, menus, buttons, icons, and the like. In addition to size and position, the user interface elements may have other properties, such as a margin, spacing, or the like. Furthermore, the user interface elements are used by the user to interact with the user device to enter user input data. The user input data is the information provided by the user while interacting with the system via the user interface of the user device. For example, a given user interface element may include a text box that is configured to receive textual input from the user, such as a name of the user or the age of the user. In such example, the given user interface element enables the user to input the user input data and receive the user input data from the user. Optionally, a user interface element may generally be visible, though there may be times when a user interface element is hidden. Optionally, the user interface used herein is a graphical user interface (GUI).

The system comprises the blood glucose measuring device. Throughout the present disclosure, the term "*blood glucose measuring device*" refers to a medical device for measuring a concentration or an amount of

glucose present in blood of the user. Typically, the blood glucose measuring device is a compact device having a small size enabling the user to conveniently utilise and carry the blood glucose measuring device. In an example, the blood glucose measuring device has a weight of 25
5 grams and a diameter of 40 millimetre. The concentration or amount of glucose present in the blood is referred to as blood glucose level. Optionally, a predefined concentration of glucose in the blood is desired for a good health of the user. In an example, a desirable blood glucose level for good health of an adult user (having an age more than 18 years)
10 is below 100 mg/dL (milligram per deciliter) before the adult user consumes food and the blood glucose level two hours after the adult user consumes food is less than 140 mg/dL. The blood glucose measuring device enables the user to continuously measure the blood glucose levels and based on the measurements of the blood glucose levels the user may
15 take necessary actions such as diet control, medication to maintain the desired blood glucose level. Optionally, the blood glucose measuring device accurately measures the blood glucose level in a range of 30 mg/dL (milligram per deciliter) to 600 mg/dL (milligram per deciliter). More optionally, the blood glucose measuring device accurately measures
20 the blood glucose level in a range of 1.665 mmol/L (millimoles per liter) to 33.3 mmol/L (millimoles per liter).

The blood glucose measuring device is communicably coupled to the user device for operation. Specifically, the blood glucose measuring device is configured in a manner that the blood glucose measuring device starts or
25 activates to perform one or more functions. Moreover, the one or more functions that are performed by the blood glucose measuring device enables measurement of the blood glucose levels of the user. In an example, the coupling of the user device with the blood glucose measuring device enables the user device to control a start of
30 measurement of blood glucose levels. In an embodiment, the blood glucose measuring device is communicably coupled to the user device via

a connecting means. The term connecting means herein refers to a wired or a wireless connection between the blood glucose measuring device and the user device via which the user device controls the operation of the blood glucose measuring device. In an example, the connecting means
5 may be a USB (Universal Serial Bus) or MICRO USB (Universal Serial Bus) cable. In such an example, the USB (Universal Serial Bus) or MICRO USB (Universal Serial Bus) cable may be a USB (Universal Serial Bus) or MICRO USB (Universal Serial Bus) standard A connector or a USB (Universal Serial Bus) or MICRO USB (Universal Serial Bus) standard B
10 connector or a USB (Universal Serial Bus) or MICRO USB (Universal Serial Bus) type C connector and the like. Optionally, for a connection via USB (Universal Serial Bus) or MICRO USB (Universal Serial Bus) cable, the user device and the blood glucose measuring device comprise a female connecting unit to receive a male connecting unit present at both ends of
15 the USB (Universal Serial Bus) or MICRO USB (Universal Serial Bus) cable. In another example, the connecting means may be an auxiliary input cable. In such an example, the auxiliary input cable may have a plug of diameter 6.35mm (millimetre), or a plug of diameter 3.5 mm (millimetre) or a plug of diameter 2.5 mm (millimetre). Optionally, for a
20 connection via Auxiliary input cable, the user device and the blood glucose measuring device comprise a jack to receive plugs of the Auxiliary input cable for establishing a connection thereof. In yet another example, the wireless connecting means may comprise connections via Internet, Bluetooth, NFC (Near Field Communication). In such an example, the
25 user device and the blood glucose measuring device comprise wireless connectivity modules such as Internet module, Bluetooth module, NFC (Near Field Communication) module. In another example, the connecting means may be a Lightning[®] (connector).

Optionally, the blood glucose measuring device comprises a UART
30 (Universal asynchronous receiver-transmitter) interface. In such a case, a USB (Universal Serial Bus) to UART (Universal asynchronous receiver-

transmitter) bridge controller is employed in the blood glucose measuring device to enable the user to connect the user device to the blood glucose measuring device via the USB (Universal Serial Bus) connecting means.

In an embodiment, the blood glucose measuring device is a passive
5 device. The blood glucose measuring device requires power for performing its operations. Specifically, the power required by the blood glucose measuring device is provided by the user device. Moreover, the connectivity means enables the user device to provide the power to the blood glucose measuring device. In an example, the blood glucose
10 measuring device is provided power by the user device upon receiving a start instruction from the user device. In another example, the blood glucose measuring device receives power from the user device via the USB (Universal Serial Bus) cable. In yet another example, the blood glucose measuring device receives power from the user device wirelessly
15 via induction charging.

In an embodiment, the blood glucose measuring device does not have a screen to display any information. The blood glucose measuring device is configured to display the information to the user via the user interface displayed on the screen of the user device. For example, an error
20 information describing the malfunction of the blood glucose measuring device may be displayed in the user interface of the user device.

Moreover, the blood glucose measuring device comprises the electronic strip port for generating the electronic signal based on the electrochemical reaction occurring on the biochemical strip removably
25 coupled therein. Typically, the user provides a blood sample to the blood glucose measuring device. Moreover, the user obtains the blood sample by pricking a finger. In an example, a quantity of the blood sample obtained is in microliters. In another example, the blood glucose measuring device requires 0.5 microliters of blood sample for
30 determination of blood glucose level. Generally, the blood sample is

provided by the user on the biochemical strip. Typically, the biochemical strip comprises an enzyme referred to as glucose oxidase enzyme and a chemical referred to as ferricyanide. Moreover, upon providing the blood sample on the biochemical strip, the glucose present in the blood

5 undergoes electrochemical reaction with the glucose oxidase enzyme to produce gluconic acid. Furthermore, the gluconic acid undergoes electrochemical reaction with ferricyanide to produce ferrocyanide. The ferrocyanide produced on the biochemical strip generates electronic signals which increases the electronic power used in the electronic strip

10 port. Consequently, a change in the electronic power provided by the blood glucose measuring device enables the determination of the electronic signal generated by the electrochemical reaction. Additionally, the removable coupling of the biochemical strip with the electronic strip enables the user to replace the biochemical strip upon the generation of

15 the electronic signal.

Furthermore, the blood glucose measuring device comprises the temperature sensor for sensing ambient temperature. Throughout the present disclosure, the term "*ambient temperature*" refers to a temperature of the air in an environment comprising the user and the

20 blood glucose measuring device. The ambient temperature is essential for determination of accurate blood glucose levels of the user. In an example, an ambient temperature may be a room temperature such as 20 degree Celsius. Moreover, the concentration of glucose present in the blood of the user varies based on the ambient temperature. Furthermore,

25 a dependency of the concentration of glucose on the temperature results in production of an incorrect electronic signal. The blood glucose measuring device may generate an incorrect blood glucose levels based on the incorrect electronic signal. Therefore, the ambient temperature is significant in determination of correct blood glucose levels of the user.

30 Optionally, the temperature sensor converts the ambient temperature into a corresponding electronic digital signal. Optionally, the temperature

sensor is configured to accurately sense the ambient temperature in a range of 1 degree Celsius to 45 degree Celsius.

Moreover, the blood glucose measuring device comprises the control unit configured to compute the blood glucose level based on the electronic
5 signal received from the electronic strip port and the ambient temperature received from the temperature sensor. Throughout the present disclosure, the term '*control unit*' refers to a computational element that is operable to respond to and processes instructions that drive the blood glucose measuring device. Optionally, the control unit
10 comprises, but is not limited to, a microprocessor, a microcontroller, a complex instruction set computing (CISC) microprocessor, a reduced instruction set (RISC) microprocessor, a very long instruction word (VLIW) microprocessor, or any other type of processing circuit. Moreover, the term "control unit" may refer to one or more individual
15 processors, processing devices and various elements associated with a processing device that may be shared by other processing devices. Additionally, the one or more individual processors, processing devices and elements are arranged in various architectures for responding to and processing the instructions that drive the blood glucose measuring
20 device. Optionally, the control unit is operable to compute the blood glucose level in a processing time of less than or equal to five seconds.

In an embodiment, the control unit is configured to employ one or more derived regression equations for computing the blood glucose level. The one or more derived regression equations facilitates a relationship
25 between the ambient temperature and the electronic signal to determine an accurate blood glucose level irrespective of the variations in the ambient temperature. In an example, the blood glucose measuring device determines the blood glucose level of a patient to be 150 mg/dL (milligram per deciliter) at an ambient temperature of 30 degree Celsius.
30 In such an example, the blood glucose measuring device determines the

blood glucose level of the patient to be 150 mg/dL (milligram per deciliter) even at an ambient temperature of 40 degree Celsius. Therefore, the one or more derived regression equations enables the blood glucose measuring device to efficiently determine a similar blood
5 glucose level for the user even in different ambient temperature.

Moreover, the control unit is further configured to provide the user device with the blood glucose level to be displayed on the user interface. The blood glucose level is provided to the user device via the connecting means. The user device enables the user to view the blood glucose level
10 determined by the blood glucose measuring device. In an embodiment, the user interface comprises one or more user interface elements to control the operation of the blood glucose measuring device. In an example, the one or more user interface elements enable the user to provide a wake up command to the blood glucose measuring device by
15 clicking on a wake up text block on the user interface. In another example, the one or more user interface elements enable the user to receive an acknowledgment from the blood glucose measuring device via a green button on the user interface. In yet another example, the one or more user interface elements enable the user to receive an instruction
20 from the blood glucose measuring device for insertion of biochemical strip. In another example, the one or more user interface elements enable the user to receive an acknowledgment from the blood glucose measuring device about acceptance of the biochemical strip. In yet another example, the one or more user interface elements enable the
25 user to instruct the blood glucose measuring device to start operation.

The system comprises the data aggregating arrangement communicably coupled to the user device for receiving the blood glucose level and the user input data provided by the user agent module. Throughout the present disclosure, the term "*data aggregating arrangement*" refers to an
30 arrangement comprising a computational entity configured to acquire,

process and/or respond to the blood glucose level and the user input data provided by the user agent module of the user device. Optionally, the data aggregating arrangement includes one or more programmable and non-programmable components. Examples of the one or more

5 programmable and non-programmable components may include memory, processor, network adapter, cabinets, crisscrossed wires, connector and the like. Moreover, the one or more programmable and non-programmable components of data aggregating arrangement are configured to host computer programs and/or routines that provide

10 various services. In one example, the services may include providing connectivity between the data aggregating arrangement and the user device for establishing a communication session and subsequently receiving the blood glucose level and the user input data from the user agent module. In another example, the services may include providing a

15 data repository service for storing the information related to the user. In yet another example, the services may include hosting computer programs and/or routines for processing the one or more inputs received from the user agent module. The data aggregating arrangement is communicably coupled to the user device via a data network. Examples

20 of the data network may include, but is not limited to, one or more peer-to-peer network, a hybrid peer-to-peer network, local area networks (LANs), radio access networks (RANs), wide area networks (WANs), portions of a public network such as the Internet, a cellular network and the like. Optionally, the data aggregating arrangement and the user

25 device are operable to exchange information related to the user carried out via any number of known protocols suitable for exchanging information including voice, video, data and combinations thereof. Examples of the protocols may include, but not limited to, Internet Protocol (IP), Wireless Access Protocol (WAP), Frame Relay, or

30 Asynchronous Transfer Mode (ATM).

- In an embodiment, the user input data comprises personal information of the user. The personal information of the user includes demographical details, connectivity details, financial details, career details, health details, and the like. In an example, the demographical details of the user
- 5 may include date of birth, age, gender, address, location, number of family members, religion, citizenship, and the like; the connectivity details of the user may include a phone number, an email address of the user, and the like; the financial details of the user may include bank account number, the vendor details of which the user uses the banking
- 10 services, debit or credit card number and the like; the career details associated to the user may include job designation, total amount of experience, current salary, and the like; the health details associated to the user may include weight, height, body mass index, major disorders, and the like.
- 15 In an embodiment, the personal information of the user is acquired by the data aggregating arrangement from a third-party service provider. The third-party service provider refers to one or more systems, applications, and/or a combination thereof for providing electronic content (namely, the data describing the personal information of the
- 20 user) to the data aggregating arrangement via the data network. Furthermore, the third-party service provider is subscription based, i.e. the data describing the personal information of the user is provided as an online service that is accessed by the data aggregating arrangement with subscriber accounts.
- 25 In an embodiment, the user input data comprises information describing food intake of the user and its corresponding timings. The information describing the food intake of the user and its corresponding timings refers to an amount and type of the food consumed by user, and the corresponding timings refers to the time at which the amount and the
- 30 type of the food is consumed by user. For example, the amount may be

measured in various units such as grams, kilograms, calories and the like, and type may describe the category of food, such as organic, non-organic, vegan, vegetarian, non-vegetarian and the like. In such example, the corresponding timing may describe the time of the 24 hours
5 at which the user is consuming the food, such as at 0600 hours, 0800 hours, 1300 hours, 1700 hours, 2000 hours and 2200 hours.

In an embodiment, the user input data comprises information describing physical activity performed by the user. The information describing the physical activity performed by the user refers to the movement of the
10 user in one or more direction. For example, the movements may include the daily movements, such as walking, running, swimming, sleeping or other activity. It may be appreciated that a sensor arrangement may be communicatively coupled with the user device to provide data related to the physical activity performed by the user, that is further processed by
15 the user agent application and thereafter transmitted to the data aggregating arrangement via the data network.

In an embodiment, the user input data comprises information describing medication consumed by the user. The information describing the medication consumed by the user includes the details of the one or more
20 medicines consumed by the user. Moreover, the information describing the medication consumed by the user includes time at which the user consumes the medicine. For example, the information describing the medication consumed by the user may describe that the user consumes the medicine 'W' 20 minutes before 0600 hours, the medicine 'X' 10
25 minutes before 1300 hours, the medicine 'Y' 10 minutes before 2000 hours, and the medicine 'Z' 10 minutes after 2200 hours.

In an embodiment, the data aggregating arrangement includes a database, wherein the database is configured to store the received blood glucose level and the user input data at one or more specific data
30 structure suitable for further computation. Examples of the data structure

may include a table, a map, a grid, a packet, a datagram, a file, a document, a list or any other form. The database may be hardware, software, firmware and/or any combination thereof. For example, the database may include any data storage software and systems, such as,
5 for example, a relational database like IBM DB2 and Oracle 9. Additionally, the blood glucose level and the user input data are stored in the database in the form of data elements including (but are not limited to) data records and bits of data. It will be appreciated that, the data elements associated to a given user populates the database in a specific
10 section that is assigned to the given user

The data aggregating arrangement is configured to process the blood glucose level and the user input data using one or more algorithms. The one or more algorithms are any collection or set of instructions executable by a computer or other digital system so as to configure the data
15 aggregating arrangement to analyze the blood glucose level and the user input data. Additionally, the one or more algorithms is intended to encompass such instructions stored in storage medium such as RAM, a hard disk, optical disk, or so forth, and is also intended to encompass so-called "firmware" that is software stored on a ROM or so forth. Optionally,
20 the one or more algorithms refer to software application. Such one or more algorithms is organized in various ways, for example the one or more algorithms includes software components organized as libraries, Internet-based programs stored on a remote server or so forth, source code, interpretive code, object code, directly executable code, and so
25 forth. It may be appreciated that the one or more algorithms may invoke system-level code or calls to other software residing on a server or other location to perform certain functions. Furthermore, the one or more algorithms may be pre-configured and pre-integrated with an operating system of the data aggregating arrangement.

Moreover, the one or more algorithms are artificial intelligence (AI) algorithms. Specifically, the one or more algorithms are executable upon the data aggregating arrangement, and are operable to adapt and adjust their operating parameters in an adaptive manner, depending upon
5 information that is presented thereto when executed. Thus, by learning by example from a given blood glucose level and a given user input data, neural networks and variable state engines of the artificial intelligence (AI) algorithms are thereby programmed to analyze the given blood glucose level and the given user input data. Thus, it will be appreciated
10 that processing of the given blood glucose level and the given user input data is performed in a semi-automated or automated manner.

In an embodiment, the data aggregating arrangement is operable to employ historical recorded data including the blood glucose level and the user input data provided by the user agent module, as an input parameter
15 to the one or more algorithms. The historical recorded data including the blood glucose level and the user input data refers to the chronologically stored data in a specific data structure including the blood glucose level and the user input data. Specifically, the historical recorded data includes each and every blood glucose level and the user input data associated to
20 the user that was transmitted by the user agent module since a first use of the system. More specifically, the historical recorded data is the periodically saved blood glucose level reading and the user input data provided by the user agent module. For example, the first blood glucose level of a user A was L and the user input data was n1, n2, n3 and n4,
25 the second blood glucose level of a user A was M and the user input data was n1, n2, n5 and n4, the third blood glucose level of a user A was N and the user input data was n1, n2, n3 and n6, the fourth blood glucose level of a user A was O and the user input data was n1, n2, n7 and n8, and the fifth blood glucose level of a user A was P and the user input data
30 was n1, n2, n7 and n9. In such example, the chronologically stored data of the blood glucose levels and the user input data of the user A is the

historical recorded data. Furthermore, in such example, the one or more algorithms may consider the blood glucose levels L, M, N, O and P, and the user input data n1, n2, n3, n4, n5, n6, n7, n8 and n9, and the relations between the blood glucose levels and the user input data to
5 process the blood glucose level and the user input data, such as a real-time blood glucose level and the user input data. It will be appreciated that the database is configured to store the blood glucose levels and the user input data of the user chronologically.

In an embodiment, the one or more algorithms process the historical
10 recorded data to determine trend in physiological condition of the user. The trend determined in the historical recorded data refers to any commonality in the physiological condition of the user. In an embodiment, the trends are determined based on a variation in the blood glucose level of the user. The variation in the blood glucose level of the
15 user refers to the difference in the blood glucose levels of the user. For example, as mentioned in an aforesaid example the first, the blood glucose level L may be greater than blood glucose level M, the blood glucose level N may be lesser than the blood glucose level M, the blood glucose level O may be lesser than the blood glucose level P, the blood
20 glucose level O may be lesser than N. In such an instance, the one or more algorithms are configured to process the historical recorded data to determine the physiological condition of the user.

In an embodiment, the trends are determined based on a preference provided by the user. The user interface includes one or more user
25 interface elements that enable providing specific preference of the user. In an embodiment, preference provided by the user comprises a diet preference of the user. For example, the user may prefer to consume fruits. In an embodiment, preference provided by the user comprises a daily routine preference of the user. In an example, the daily routine
30 preference of the user may be that the user prefers to have 8 hours of

continuous sleep. In an embodiment, preference provided by the user comprises a physical restraint of the user. In an example, physical restraint of the user may be a fractured leg. Optionally, the preference provided by the user may be determined from the user input data. For

5 example, if the user has mentioned that the user intakes food at a specific time such as 1700 hours repeatedly, the user performs physical activity for a period such as for 1 hour at 0700 hours repeatedly, or consumes medication 10 minutes after 2200 hours. In such an instance, the preference provided by the user may be considered as the user prefers

10 to intake food at 1700 hours, perform the physical activity for 1 hour at 0700 hours, and consume medication 10 minutes after 2200hours. The one or more algorithms analyze the user input data describing the personal information, the food intake, the physical activity, the medication consumed by the user to determine how the body of the user

15 reacts when the blood glucose level is L, M, N, O and P, and the preference provided by the user is considered. In an example, the one or more algorithms analyze if there is a specific pattern. In such an instance, the specific pattern may be that the user is having a user is having a blood glucose level of O when the user is consuming fruits and sleeping

20 for 8 hours in 24 hours.

Furthermore, the data aggregating arrangement processes the blood glucose level and the user input data using one or more algorithms to determine the lifestyle regime for the user and display the lifestyle regime on the user interface of the user device. The one or more algorithms are

25 configured to generate the lifestyle regime including a list of habits and activities based on the blood glucose level, the user input data, and the trends that may enable the user to be healthy. It will be appreciated that healthy is a state of the user's body in which the body performs its vital functions normally or properly. For example, user is having a blood

30 glucose level of O when the user is consuming fruits and sleeping for 8 hours in 24 hours. In such an example, the lifestyle regime determined

by the one or more algorithms may include a 2 hours of physical activity to be performed by the user, perform food intake at 0600 hours, 0900 hours, 1200 hours, 1500 hours, 1800 hours and 2100 hours, and consume the medicine 'W' 20 minutes before 0600 hours, the medicine
5 'X' 10 minutes before 1200 hours, the medicine 'Y' 10 minutes before 1800 hours, and the medicine 'Z' 10 minutes after 2100 hours. In such an example, the user having the blood glucose level of O may be considered as healthy. Moreover, in such an example, the user continues to be healthy by considering the lifestyle regime determined by the one
10 or more algorithms. Furthermore, the aforementioned information is transmitted by the data aggregating arrangement to the user device, and subsequently displayed in the user interface of the user agent module in the form of user interface elements.

DETAILED DESCRIPTION OF THE DRAWINGS

15 Referring to FIG. 1, there is shown a block diagram of a system **100** for determining a lifestyle regime for a user, in accordance with an embodiment of the present disclosure. As shown, the system **100** comprises a user device **102**, a blood glucose measuring device **104**, and a data aggregating arrangement **106**. Moreover, the blood glucose
20 measuring device **104** is communicably coupled to the user device **102** for operation. Furthermore, the data aggregating arrangement **106** is communicably coupled to the user device **102**.

Referring to FIG. 2, there is shown a schematic illustration of an environment **200** for determining a lifestyle regime for a user, in
25 accordance with an embodiment of the present disclosure. As shown, the environment **200** comprises a blood glucose measuring device **202** communicably coupled to a user device **204** a connecting means **206**. The user device **204** is configured to receive user input data from a corresponding user. The blood glucose measuring device **202** is
30 configured to compute a blood glucose level and provide the user device

204 with the blood glucose level. As shown, the user device **204** is communicably coupled to the data aggregating arrangement **208**. The data aggregating arrangement **208** is configured to receive the blood glucose level and the user input data from the user device **204** and store
5 the blood glucose level and the user input data in a database **210**. Moreover, the data aggregating arrangement **208** determines the lifestyle regime for the user and displays the lifestyle regime on the user device **204**.

Referring to FIG. 3, there is shown an illustration of exemplary user
10 interface of a user device **300**, in accordance with an embodiment of the present disclosure. The user device **300** comprises a user agent module. Moreover, the user agent module is configured to generate a user interface **302** to be displayed on a screen of the user device and receive user input data from a user. As shown, the user interface **302** receives
15 user input data in form of preferences depicted as a diet preference **304** of the user; a daily routine preference **306** of the user; and a physical restraint **308** of the user. Moreover, the user interface **302** comprises a user interface element **310** to control a start operation of the blood glucose measuring device.

20 Referring to FIG. 4, there is shown an illustration of steps of a method **400** for determining a lifestyle regime for a user, in accordance with an embodiment of the present disclosure. The method **400** is implemented via a system comprising a user device, a blood glucose measuring device, and a data aggregating arrangement. The blood glucose measuring
25 device comprises an electronic strip port, a temperature sensor, and a control unit. At a step **402**, an electronic signal is generated based on an electrochemical reaction occurring on a biochemical strip removably coupled to the electronic strip port. At a step **404**, an ambient temperature is sensed by the temperature sensor. At a step **406**, a blood
30 glucose level is computed, by the control unit, based on the electronic

signal received from the electronic strip port and the ambient temperature received from the temperature sensor. At a step **408**, the blood glucose level and the user input data are received by the data aggregating arrangement, and the blood glucose level and the user input
5 data are processed using one or more algorithms to determine the lifestyle regime for the user and display the lifestyle regime on the user device.

The steps **402** to **408** are only illustrative and other alternatives can also be provided where one or more steps are added, one or more steps are
10 removed, or one or more steps are provided in a different sequence without departing from the scope of the claims herein.

Modifications to embodiments of the present disclosure described in the foregoing are possible without departing from the scope of the present disclosure as defined by the accompanying claims. Expressions such as
15 “including”, “comprising”, “incorporating”, “have”, “is” used to describe and claim the present disclosure are intended to be construed in a non-exclusive manner, namely allowing for items, components or elements not explicitly described also to be present. Reference to the singular is also to be construed to relate to the plural.

CLAIMS

1. A system (100) for determining a lifestyle regime for a user, the system comprising:

- a user device (102, 204, 300) comprising a user agent module,
5 wherein the user agent module is configured to generate a user interface (302) to be displayed on a screen of the user device, and receive user input data from the user;
- a blood glucose measuring device (104, 202) communicably coupled to the user device for operation, wherein the blood glucose measuring
10 device comprising
 - an electronic strip port for generating an electronic signal based on an electrochemical reaction occurring on a biochemical strip removably coupled therein;
 - a temperature sensor for sensing ambient temperature; and
 - 15 a control unit configured to compute a blood glucose level based on the electronic signal received from the electronic strip port and the ambient temperature received from the temperature sensor, wherein the control unit is further configured to provide the user device with the blood glucose level to be displayed on the user
20 interface; and
- a data aggregating arrangement (106, 208) communicably coupled to the user device for receiving the blood glucose level and the user input data provided by the user agent module, and to process the blood glucose level and the user input data using one or more
25 algorithms to determine the lifestyle regime for the user and display the lifestyle regime on the user interface of the user device.

2. A system of claim 1, characterised in that the blood glucose measuring device (104, 202) is a passive device.

3. A system of claim 1, characterised in that the user interface (302) comprises one or more user interface elements (310) to control the operation of the blood glucose measuring device (104, 202).

4. A system of claim 1, characterised in that the control unit is configured
5 to employ one or more derived regression equations for computing the blood glucose level.

5. A system of claim 1, characterised in that the user input data comprises at least one of:

- (i) personal information of the user;
- 10 (ii) information describing food intake of the user and its corresponding timings;
- (iii) information describing physical activity performed by the user; and
- (iv) information describing medication consumed by the user.

6. A system of claim 1, characterised in that the personal information of
15 the user is acquired by the data aggregating arrangement (106, 208) from a third-party service provider.

7. A system of claim 1, characterised in that the data aggregating arrangement (106, 208) is operable to employ historical recorded data including the blood glucose level and the user input data provided by the
20 user agent module, as an input parameter to the one or more algorithms.

8. A system of claim 1, characterised in that the one or more algorithms process the historical recorded data to determine trend in physiological condition of the user.

9. A system of claim 8, characterised in that the trends are determined
25 based on:

- (i) a variation in the blood glucose level of the user; and
- (ii) a preference provided by the user.

10. A system of claim 9, characterised in that the preference provided by the user comprises at least one of:

- (i) a diet preference (304) of the user;
- (ii) a daily routine preference (306) of the user; and
- (iii) a physical restraint (308) of the user.

11. A system of claim 1, characterised in that the blood glucose
5 measuring device (104, 202) is communicably coupled to the user device
via a connecting means (206).

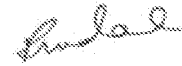
12. A method for determining a lifestyle regime for a user, the method
being implemented via a system (100) comprising:

- a user device (102, 204, 300) comprising a user agent module,
10 wherein the user agent module is configured to generate a user
interface (302) to be displayed on a screen of the user device, and
receive user input data from a corresponding user;
- blood glucose measuring device (104, 202) communicably coupled to
the user device for operation, wherein the blood glucose measuring
15 device comprising
 - an electronic strip port for generating an electronic signal based on
an electrochemical reaction occurring on a biochemical strip
removably coupled therein;
 - a temperature sensor for sensing ambient temperature; and
 - 20 a control unit configured to compute a blood glucose level based on
the electronic signal received from the electronic strip port, and the
ambient temperature received from the temperature sensor,
wherein the control unit is further configured to provide the user
device with the blood glucose level to be displayed on the user
25 interface; and
- a data aggregating arrangement (106, 208) communicably coupled to
the user device for receiving the blood glucose level and the user
input data provided by the user agent module, and to process the
blood glucose level and the user input data using one or more

algorithms to determine the lifestyle regime for the user and display the lifestyle regime on the user interface of the user device.

Dated: 05th March 2019

5



Prosenjit Mondal
IN/PA-2755
Agent for the Applicant