

An Artificial Intelligence Pamper Angel Health System & Method

TECHNICAL FIELD

This disclosure relates to the field of an Artificial Intelligence Pamper Angel Health System and Method (AIPA Health). In particular, it involves artificial intelligence, face recognition, database, robotics, imaging data acquisition and analysis (including digital medical thermal imaging, medical hyperspectral imaging, video and audio etc.), medical technology, Traditional Chinese Medicine diagnostic, smart wear, cloud computing, data center, blockchain technology, quantum communication and network technology, e-commerce, healthy ions, beauty regimen, social media, mass media, environment and security, etc.

BACKGROUND

With the constant improvement of living standards, the aging population is becoming more of a problem, and serious diseases are becoming more common in young generation. People are increasingly concerned about the health of themselves, their families, friends and relatives. A wide variety of wearable devices for detecting and recording human motion and basic health data are becoming popular. However, most of these devices are for step counting, heartbeat, blood pressure, blood oxygen, electrocardiogram, body position, body sensation, calorie consumption, etc., and the data of which is relatively simple, the inter-connectivity is poor, and there are usually serious data eccentricities.

With the widespread use of high-speed mobile Internet and Internet of Things (IoT), personal health data collection and health warnings have become more convenient. There is also a higher demand for the accuracy of these personal health data.

It has been widely acknowledged that Traditional Chinese Medicine (TCM) can understand and diagnose an individual's health and hidden diseases through four

diagnosis methods, namely observation, auscultation and olfaction, inquiry and pulse feeling and palpation. The different parts of human face, palm(s) and tongue correspond to the various organs inside the body. Experienced Chinese Medicine physicians can give a treatment plan by observing the color of the patient's face, palm(s) and tongue (which infer the health of the human body); feeling the pulse, asking about the conditions of the patient. When there is an abnormality in one's health, there should be corresponding abnormal reactions in the face, palm(s) and tongue, such as temperature and color changes, and some special chemicals secretions.

A high sensitive Infrared Thermal Imaging module measures the subtle temperature changes of the human face, palm(s), tongue etc., and a hyperspectral camera detects special chemicals that are secreted due to abnormal health status. By analyzing these changes, it is high possible to determine whether an individual's health status is abnormal. It can also be used to track the effects of treatments, like to evaluate the effects of beauty treatment products and services.

At present, the health care platforms on the internet are mainly for hospital registration, remote diagnosis and treatment, medicine purchasing, and hospital or doctor recommendation. People have a lower trust in such Internet health medical platforms, resulting in low use rates of the huge investments on building these platforms, beside that, there is no related value added service to support these platforms.

With the rapid development of artificial intelligence, intelligent deep learning of machines, high efficient cloud computing, high-capacity cloud storage, high-speed Internet communication technology, more powerful computer and intelligent mobile device processing capabilities, as well as the launch of neuron processors, people need a comprehensive artificial intelligence personal health care system that is more efficient, more accurate, more convenient, more personalized and high security, which not only has personal health care functions, but also has an effective integration of health information sharing, social platforms and mass media etc..

SUMMARY OF THE INVENTION

This invention discloses an Artificial Intelligence Pamper Angel Health System and Method (AIPA Health). It applies a plurality of artificial intelligence technologies to improve the accuracy and convenience of daily personal health data collection. The use of high-definition camera(s) combined with face recognition technology to accurately identify users, effectively prevent user health data acquisition errors. It uses high-end infrared thermal imaging camera(s) to accurately capture the exposed user's face, palm(s), tongue and other health characteristics data and temperature. Through the network, the encrypted collected daily health characteristic data of the user is transmitted and stored to the cloud service platform, and the daily health characteristic data of the user is analyzed by the artificial intelligence imaging comparison technology. If the latest health characteristic data is detected to be abnormal, the system will immediately perform a comparison analysis with a professional medical imaging database and send the diagnosis results and suggestions to the user. The system not only shares data with other smart wearable devices, the users can also use social media to share their personal health status data with their family members and friends. In addition to providing users with their daily health status, the users can obtain health knowledge and various health services from the AIPA e-commerce platform.

Different from the smart wearable devices such as various types of wristbands currently widely used, AIPA Health intelligent terminals not only collect daily users' health data, it is also built-in healthy ion air and environmental monitoring system, which can form a healthy ion air field around this intelligent terminal, let the user know the quality of the surrounding environment and public environment index, etc. It can also provide information services, combined with regional, ethnic, climate, environmental and other data to establish a health warning mechanism for different ethnic groups in different locations and different climates, and to provide data services for the development of relevant medicine or health care products.

This invention provides a combination of artificial intelligence, face recognition, big

database, robotics, imaging data acquisition and analysis (including digital medical thermal imaging, hyperspectral imaging, video and audio etc.), medical technology, Traditional Chinese Medicine diagnostic, smart wear, cloud computing, data center, blockchain technology, quantum communication and network technology, e-commerce, healthy ions, beauty regimen, social media, mass media, environment and security, etc.. It is an Artificial Intelligence Pamper Angel Health System and Method (AIPA Health).

BRIEF DESCRIPTION OF THE DRAWING

FIG.1 shows a schematic flow chart of AIPA Health.

FIG.2 shows a schematic depiction of AIPA Health smart devices operation.

FIG.3 shows schematics depiction of AIPA Health and other AIPA professional services.

FIG.4 shows schematics depiction of AIPA Health modules.

FIG.4a shows schematics depiction of AIPA Health data acquisition and storage

FIG.4b shows schematics depiction of AIPA Health AI learning module

FIG.4c shows schematics depiction of AIPA Health imaging comparison module

FIG.4d shows schematics depiction of AIPA Health communication module

FIG.4e shows schematics depiction of AIPA Health connection module

FIG.4f shows schematics depiction of AIPA Health e-commerce module

FIG.4g shows schematics depiction of AIPA Health knowledge database

FIG.4h shows schematics depiction of AIPA Health operation module

FIG.4i shows schematics depiction of AIPA Health user registration module

FIG.4j shows schematics depiction of AIPA Health healthy ion module

FIG.4k shows schematics depiction of AIPA Health information sharing module

FIG.5 shows schematics depiction of AIPA Health cloud analysis module

FIG.6 shows schematics depiction of AIPA Health system management module

DETAILED DESCRIPTION

When the Visible Light Imaging Camera module detects an user and collects the user's face information, and the Non-Visible Light Imaging Camera module collects the exposed user's face, palm(s), tongue, other health feature spectral data and temperature, the related health feature imaging data like medical thermal imaging data, medical hyperspectral imaging data, brightness, color and color difference etc are encrypted and transmitted to the cloud service platform through the Communication module, and a connection with the registered user's smart device is linked. After received these data, the cloud service platform identifies the users and stores their data into their database by Face Recognition and Data Storage modules; at the same time, the real-time user's health feature data is compared with user's historical data by the Imaging Comparison module. If there is no abnormal signal, the system will update the user that his/her health condition is normal; if abnormal signals are detected, the system will automatically compare the data with Medical Imaging Database and combine a Traditional Chinese Medicine diagnostic and a Health Feature Data Deep Learning module to give the user's health status as well as the improvement suggestions. Through the Communication and Social Media modules, users can see their personal health status and share with their authorized friends and family. The system gives improvement suggestions to users who is in an abnormal health condition, as well as providing value-added services to achieve the purpose of pampering for users' health. The features of the AIPA Health system and method are as follows:

This invention discloses an AIPA Health system, which combines artificial intelligence technology to improve the accuracy, convenience and high efficiency of daily personal health data collection. It utilizes a high-definition Visible Light Imaging Camera module FIG.4a A4111 combined with Face Recognition Module FIG.4a A412 to

accurately identify users, effectively prevent the error of health data collection and storage among different users, and uses a high-end Non-Visible Imaging Camera module FIG.4a A4112 to accurately collect exposed user's face, palm(s), tongue and other health feature data. The collected user's daily health data is encrypted and transmitted to a Data Storage Module FIG.4a A414 and a Cloud Analysis Module FIG.5 C51 through a Connection Module FIG.4e A451, applying artificial intelligence image matching technology through an Imaging Comparison Module FIG.4c A431 and a Health Feature Data Deep Learning Module FIG.4b A421 to analyze the user's daily health data in real time. If abnormal signal are detected, the system immediately compares with a Medical Imaging Big Database FIG.4b A422 and a Traditional Chinese Medicine Diagnostic Module FIG.4c A432, and then sends the analytic results and suggestions to the users. Users can also integrate with other smart wearable devices to achieve data sharing through a Connection Module FIG.4e A451. While understanding the personal health status, users can also use a Social Media Module FIG.4e A456 to share with their family and friends. All data are protected by Blockchain Module FIG.4a A415 for encryption and prevention data tampering and the data transmission through the Connection Module FIG.4e A451.

Not only let users understand their daily health status, AIPA Health also enable users to obtain health-related information from a Health Knowledge Database FIG.4g A471, and provides various health services through an E-Commerce Module FIG.4f A461. With a Communication Module FIG.4d A441, this service could be loaded by other Medical Service Platform(s) FIG.4d A443, other Healthcare Platform(s) FIG.4d A444 and other professional service provider(s) FIG.4d A445 to give users with better services and experiences.

An AIPA Health Operation Module FIG.4h A481 is an intelligent terminal as well as a smart device that could be a fixed or portable AIPA Health Smart Device FIG.4h A482 or a mobile AIPA Health Robot FIG.4h A483. It collects daily health data of users and provide various information from an Information Sharing Module FIG.4k A511. The built-in Healthy Ion Module FIG.4j A501 generates healthy ion field FIG.4j A502 around the smart device, detects and measures the air quality FIG.4j A503 and shows

the surrounding area air quality FIG.4j A504, the user has better health experience. The built-in high-tech AIPA Health Service Module FIG.3 A31 further diversifies a variety of professional services, like AIPA Medical Service module FIG.3 A32, AIPA Beauty and SPA Service module FIG.3 A33 and other professional service module FIG.3 A34. An AIPA Health Operation Module FIG.4h A481 uses in different regions will automatically through the Connection Module collects local geographic information by a Geographic Information System (GIS) module FIG.4e A453, and builds a database of human health characteristics and situation in different regions by an Ethnographic Information module FIG.4e A454, which provide effective health data support for helping preventive medicine and pharmaceuticals research.

Different from the widely used wearable devices for detecting and recording human exercise and basic health data, this invention applies advanced artificial intelligence technology, and makes daily personal health data collection simpler, faster and more accurate. It can collect the multiple users' personal health data at the same time. The data collection method of AIPA Health is a passive system that does not affect any life, work and travel of the users. It is a comprehensive health data service that can be used as a reminder for the daily health of individuals, and the database combines the data from different regions, ethnic groups, climate and environment to establish a health early warning mechanism for different ethnic groups in different regions and climates, as well as to provide big data services for the research and development of related medicine or health care products.

Non-Visible Imaging Camera module FIG.4a A4112 is a camera such as infrared thermal imaging camera, hyperspectral camera, to acquire non-visible characteristics of the exposed human body, and automatically collect face, palm(s), tongue and other health characteristic spectral data and temperature while people standing in front of the AIPA Health Operation Module FIG.4h A481; and then transmit the acquired analog or digital data to the Data Storage module FIG.4a A414 and the Cloud Analysis Module FIG.5 C51 through the Connection module FIG.4e A451

Visible Light Imaging Camera module FIG.4a A4111 is a high definition low light

camera, to automatically collect personal and their facial information, and to acquire visible characteristics of the human body and face, palm(s), tongue and other health characteristic spectral data while people standing in front of the AIPA Health Operation Module FIG.4h A481; and then transmit the acquired analog or digital data to the Data Storage module FIG.4a A414 and the Cloud Analysis Module FIG.5 C51 through the Connection module FIG.4e A451;

Face Recognition Module FIG.4a A412 is to detect, recognize and identify the collected facial feature information data from the Visible Light Imaging Camera module FIG.4a A4111 to confirm whether it is a registered user of the system, if it is not a pre-registered user, this module could setup a temporary user account for the non-registered user through an User Registration Module FIG. 49 A491;

Data Storage Module FIG.4a A414 is to store the encrypted user's health feature data from the Visible and Non-Visible Imaging Camera modules, as well as to store other related information data;

Blockchain Module FIG.4a A415 is to encrypt all data from Visible and Non-Visible Imaging Camera modules and other modules to prevent data tampering with blockchain technology and other latest data encryption and protection technology;

Health Feature Data Deep Learning Module FIG.4b A421 is to build an artificial intelligence personal health feature data deep learning model for each registered AIPA Health users, to analyze the collected data with this user's historical data and other medical imaging data;

Medical Imaging Big Database (MIBD) FIG.4b A422 is to classify medical characteristic imaging data from medical and scientific research institutions, including medical thermal imaging, medical hyperspectral imaging and other medical imaging;

Traditional Chinese Medicine (TCM) Diagnostic Module FIG.4c A432 is to classify and build a database of human health characteristic data from medical and scientific research institutions corresponding to different areas such as the face, palm(s),

tongue and other health characteristic data, and to obtains a health status suggestion through TCM's four diagnosis methods, namely observation, auscultation and olfaction, inquiry and pulse feeling and palpation;

Imaging Comparison Module FIG.4c A431 is to apply artificial intelligence technology to compare the latest collected user's personal health feature imaging with the user's historical health imaging data; if abnormal signal are detected, the system will compare this abnormal signal with the human body health feature data in the TCM Diagnostic Module FIG.4c A432 and the Medical Imaging Big Database FIG.4b A422 through AIPA Health the Cloud Analysis Module FIG.5 C51, and give suggestions for user's health status;

Connection Module FIG.4e A451 is to connect the AIPA Health Operation Module FIG.4h A481 with different functions to the system through wired or wireless communication networks, like telecommunication, WIFI, Bluetooth, light communication, near field connection technology and quantum communication technology, and the system will receive or send at least one set of user's health data to the connected Smart Device(s) FIG.4e A452, to collect other real-time personal health data of the user, and to integrate these data into user's personal health database. It will improve the collection efficiency and accuracy of user's health data, as well as to share personal health data with other Health care data system(s) and platform(s) FIG.4e A455. It will be able to connect to the Geographic Information System (GIS) Module FIG.4e A453, the Ethnographic Information Module FIG.4e A454, the Cloud Analysis Module FIG.5 C51 and the Social Media Module FIG.4e A456;

Health Knowledge Database FIG.4g A471 is to classify and build common health database with TCM Health Care knowledge FIG.4g A472, Modern Medical Health Care knowledge FIG.4g A473, like common disease characteristics, first aid method, food safety, mutual restraint between foods, Chinese medicine diet, rehabilitation nursing care, disability care and other health related knowledge FIG.4g A474, and constantly update to promote health knowledge FIG.4g A475;

Communication Module FIG.4d A441 is to transmit all AIPA Health smart devices acquired data to the Cloud Analysis Module FIG.5 C51 and the Data Storage Module FIG.4a A414 with quantum communication technology or other latest communication technology, and to link up all separate AIPA Health Operation Modules FIG.4h A481 in different regions all over the world by internet and IoT module or platforms FIG.4d A446; allowing user to continuously access user's own health database from the AIPA Health system even while traveling in different areas and to enjoy the no-border service worldwide; it can connect with Other Medical Service Platform(s) FIG.4d A443, Other Healthcare platform(s) FIG.4d A444, Other professional service provider(s) FIG.4d A445, the E-commerce Module FIG.4f A461 and other cloud service platforms; it can also provide doctor reservation service through relevant platforms when the user need medical assistants;

Platform Protocol module FIG.4d A442 is to provide AIPA Health communication protocol agreement with other various health care related platforms and medical institutions platforms, the user will be benefit from AIPA Health's big data service by small program and APP too;

Cloud Analysis Module FIG.5 C51 is to utilize Cloud computing module(s) FIG.5 C52 and Cloud storage service(s) FIG.5 C56 provided by other intelligence cloud service platform(s) FIG.5 C54 to improve the AIPA Health system's health data computing and Health data and imaging comparison service(s) FIG.5 C53 efficiency, and to support the AIPA system's Global health big data analysis service(s) FIG.5 C55;

Healthy Ion Module FIG.4j A501 is to generate healthy ion field FIG.4j A502 around the AIPA Health's smart device, to detect and measure the air quality FIG.4j A503 to show the surrounding area air quality FIG.4j A504 and to show local air quality information FIG.4j A505, let the user have a better health experience;

Information Sharing Module FIG.4k A511 is to provide real-time information, i.e. news, health alert and information FIG.4k A512 and other mass media service platform(s) FIG.4k A513 through built-in display screen and sound system, and to connect the other smart devices through the Communication module FIG.4d A441 to share the

information;

Social Media Module FIG.4e A456 is to share user's health status and experience with family and friends through social media platform, as well as to make a live chats, video call, health warnings, gaming etc.;

AIPA Health Robot(s) FIG.4h A483 is a robot integrated the AIPA Health system, which could provide multi-functional services, like people temperature screening, sterilization, intelligence monitoring and security services etc;

User Registration Module FIG.4i A491 is to register user by scanning user's face through Face Recognition Module FIG.4a A412; or by recommendation from friends or relatives through scanning reference code, barcode or QR code FIG.4i A493, or by data import from membership system(s) FIG.4i A494 or other customer databases from different organizations FIG.4i A495;

AIPA Health Service module FIG.3 A31 is a professional service module base on AIPA Health system with enhanced to other professional and customization modules for different professional service areas, such as AIPA Medical Service Module FIG.3 A32, AIPA Beauty and SPA Service Module FIG.3 A33 and other AIPA professional Service Module FIG.3 A34, which are in addition to the above-mentioned standard artificial intelligence personal health pampering services;

E-Commerce Module FIG.4f A461 is to build an e-commerce platform related to health products and services, link to Other online platform(s) FIG.4f A462 and Other professional service platform(s) FIG.4f A463 through the Communication Module FIG.4d A441 and IoT (Internet of Things) module or platform(s) FIG.4d A446, includes a membership management system, and identify individual members, merchant members and non-members, use crypto tokens and management systems to provide various value-added services to the members;

Geographic Information System (GIS) module FIG.4e A453 is to obtain local geographic information data through a positioning system, determine the

geographical location of the system, collect local meteorological information, setup geographic location information of the system, and perform regionalized management of the system;

Ethnographic Information module FIG.4e A454 is to establish the big data of the health characteristics and status of different ethnic groups in different meteorological environment and location by the registered users information and the geographical location and meteorological data given by the Geographic Information System;

System Management Module FIG.6 S61 is to manage User Information FIG.6 S62 and User Personal Health Data FIG.6 S63 collected by above mentioned modules and services, to manage all modules FIG.6 S64, user trusted people's health data FIG.6 S65 and other related information FIG.6 S66;

The AIPA Health provided in this disclosure uploads real-time personal health data to the cloud service platform through the above-mentioned various modules, and compares with the user's historical health database; if there is an abnormal signal, which will be further compared with other digital medical imaging big database, so as to determine whether to give health warning suggestion, therefore, it can effectively improve the user's understanding of their health, better prevent diseases, protect and pamper the health of the users. FIG.4

It is to be understood that the foregoing is a general description and exemplification, and that the present disclosure and its extension and continuity are not limited.

CLAIMS

1. An Artificial Intelligence Pamper Angel Health System characterized in that the system comprises:

an imaging camera module configured to identify a detection target and collect health imaging data of visible and non-visible light health features of exposed human body parts of the detection target; the health imaging data of the detection target further comprises:

- a) medical hyperspectral imaging data;
- b) medical thermal imaging data;
- c) an intelligent Traditional Chinese Medicine (TCM) diagnostic method;
- d) a medical imaging big database with TCM medical imaging data and modern medical imaging data.

a blockchain module configured to encrypt the health imaging data;

a connection module and a communication module configured to send the encrypted health imaging data of the detection target to a cloud analysis module;

the cloud analysis module and a data storage module configured to store the encrypted health imaging data of the detection target and to establish personal health imaging big data;

perform analysis and comparison of the personal health imaging big data at the cloud analysis module, a health feature data deep learning module and an imaging comparison module;

a system management module and an application system configured to push an analyzed personal health status report generated at the cloud analysis module to the detection target, and warn the detection target when abnormal health status is reported.

2. The system of claim 1 wherein the health imaging data of the detection target is encrypted and stored in the cloud analysis module for sharing of the personal health status report and obtain various types of health information.

3. The system of claim 1 wherein the health imaging data of the detection target can be used for on site or remote intelligent medical assisted diagnosis.

4. The system of claim 2 wherein the various types of health information can be used for online medical education and health knowledge learning.

5. The system of claim 1 further comprises:

- a) a visible light imaging data camera module;
- b) a non-visible light imaging data camera module;
- c) a hyperspectral imaging data camera module;
- d) a face recognition module;
- e) a TCM medical imaging data module
- f) a modern medical imaging data module;
- g) a TCM diagnostic module;
- h) a health knowledge database;
- i) a platform protocol module;
- j) an information sharing module;
- k) an user registration module;
- l) a power management module;
- m) a power supply module.

6. The system of claim 1 wherein the Artificial Intelligence Pamper Angel (AIPA) health system further comprises:

- a) a fixed AIPA health smart device;
- b) a mobile AIPA health smart device;
- c) a portable AIPA health smart device;

- d) an AIPA health multifunctional robot;
- e) a professional service module with AIPA health system;
- f) a healthy ion module;
- g) a social media module;
- h) an e-commerce module;
- i) a geographic information system (GIS) module;
- j) an ethnographic information module;
- k) an online education module.

7. An Artificial Intelligence Pamper Angel Health method characterized in that the method comprises:

identifying a detection target through at least one imaging camera;

collecting, through the said at least one imaging camera, health imaging data of visible and non-visible light health features of exposed human body parts of the detection target; the health imaging data of the detection target further comprises:

- a) medical hyperspectral imaging data;
- b) medical thermal imaging data;
- c) an intelligent Traditional Chinese Medicine (TCM) diagnostic method;
- e) a medical imaging big database with TCM medical imaging data and modern medical imaging data.

encrypting and sending the health imaging data of the detection target to a health data analysis server;

storing the encrypted health imaging data of the detection target;

establishing personal health imaging big data;

performing analysis and comparison of the personal health imaging big data by a

health feature data deep learning software and an imaging comparison software;

pushing an analyzed personal health status report to the detection target through a system management software and an application software, and warn the detection target when there is abnormal health status.

8. The method of claim 7 wherein the health imaging data of the detection target is encrypted and stored in the cloud analysis server for sharing of the personal health status report and obtain various types of health information.

9. The method of claim 7 wherein the health imaging data of the detection target can be used for on site or remote intelligent medical assisted diagnosis.

10. The method of claim 8 wherein the various types of health information can be used for online medical education and health knowledge learning.

11. A method for implementing claim 7 further comprises:

- a) a visible light imaging data camera;
- b) a non-visible light imaging data camera;
- c) a hyperspectral imaging data camera;
- d) a face recognition algorithm;
- e) a data storage server;
- f) an encryption algorithm;
- g) a TCM medical imaging database
- h) a modern medical imaging data;
- i) a TCM diagnostic algorithm;
- j) an imaging comparison algorithm;
- k) a communication software;
- l) a protocol agreement;

- m) a health knowledge database;
- n) a platform protocol agreement;
- o) a cloud analysis software;
- p) an information sharing software;
- q) an user registration software;
- r) a power management system;
- s) a power supply device.

12. The method of claim 7 wherein the Artificial Intelligence Pamper Angel (AIPA) health method further comprises:

- a) a fixed AIPA health smart device;
- b) a mobile AIPA health smart device;
- c) a portable AIPA health smart device;
- d) a AIPA health multifunctional robot;
- e) a professional service software with AIPA health method;
- f) a healthy ion device;
- g) a social media software;
- h) an e-commerce software;
- i) a geographic information system data collection software;
- j) an ethnographic information data collection software;
- k) an online education software.