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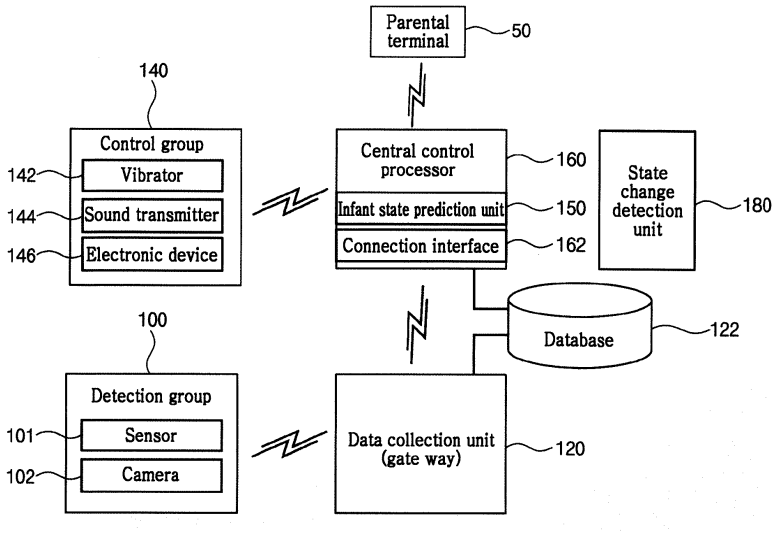
(54) SYSTEM AND METHOD FOR PROVIDING INTELLIGENT INFANT CARE SERVICE

(57) The present invention provides a system for providing an intelligent infant care service including: a detection group including a plurality of devices which are installed around an infant or a product for an infant to detect information for predicting a state of the infant; a data collection device configured to collect the information detected by the plurality of devices in the detection group; a control group including a plurality of control devices which are installed around the product for an infant or the infant, and are operated based on a control signal received through wired or wireless communication; and a central control processor configured to predict a state or situation of the infant based on the information collected by the data collection device and operate at least one or more control devices in the control group by generating the control signal based on the predicted situation or state, wherein the central control processor generates state predictive determination data including at least one or more major factors which affect the state of the infant and state predictive determination reference values for each information based on the information collected for a predetermined time, and predicts the state of the infant through comparison between the received information and the state predictive determination data, as the information detected by the detection group is received in real time.

[FIG.1]



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Description

[BACKGROUND OF THE INVENTION]

1. Field of the Invention

[0001] The present invention relates to a system and a method for providing an intelligent infant care service.

2. Description of the Related Art

[0002] In general, a guardian who brings up a baby and a young child (collectively referred to as an infant) need to monitor the infants around them at all times. The reason is that, when a sudden emergency situation occurs with unprotected infants who lack cognitive and expressive abilities, it is necessary to immediately help and support them.

[0003] Recently, CCTV cameras may have been installed for monitoring infants.

[0004] However, there are blind spots that cannot be monitored only by the CCTV cameras, and it is difficult to continuously monitor the infants.

[0005] In recent years, with the development of IT technology and data analysis technology, it is possible to collect data that can recognize various types of state of the infant, and technologies that can understand the state of the infant based on the collected data have been gradually developed.

[0006] In addition, according to the development of such technologies, there is ongoing research to accurately monitor the state of the infant and provide various care services suitable for the situation of the infant.

[Prior Art Document]

[Patent Document]

[0007] (Patent Document 1) Korean Patent Registration No. 10-1806835 (registered on December 04, 2017)

[SUMMARY OF THE INVENTION]

[0008] An object of the present invention is to provide a system and a method for providing an intelligent infant care service, which may collect data to detect a state of an infant, predict the state of the infant by applying an analysis model to the collected data, and control devices within an area where the infant exists based on the predicted state.

[0009] In addition, another object of the present invention is to provide a system and a method for providing an intelligent infant care service, which may control devices by detecting and predicting a state of an infant, then measure a change in the state of the infant based on the collected data to detect the state of the infant, such that a directionality for subsequent device control can be produced.

[0010] Further, another object of the present invention is to provide a system and a method for providing an intelligent infant care service, which may collect data for predicting a state of an infant to transmit them to an infant care service providing device connected through a communication network, predict the state of the infant, and control devices within an area where the infant exists based on the control data received from the infant care service providing device according to the predicted state of the infant.

[0011] In order to achieve the above-described objects, according to an aspect of the present invention, there is provided a system for providing an intelligent infant care service including: a detection group including a plurality of devices which are installed around an infant or a product for an infant to detect information for predicting a state of the infant; a data collection device configured to collect the information detected by the plurality of devices in the detection group; a control group including a plurality of control devices which are installed around the product for an infant or the infant, and are operated based on a control signal received through wired or wireless communication; and a central control processor configured to predict a state or situation of the infant based on the information collected by the data collection device and operate at least one or more control devices in the control group by generating the control signal based on the predicted situation or state, wherein the central control processor generates state predictive determination data including at least one or more major factors which affect the state of the infant and state predictive determination reference values for each information based on the information collected for a predetermined time, and predicts the state of the infant through comparison between the received information and the state predictive determination data, as the information detected by the detection group is received in real time.

[0012] According to another aspect of the present invention, there is provided a method for providing an intelligent infant care service including: storing and collecting information detected by a detection group including a plurality of devices which are installed around a product for an infant or the infant, and are configured to predict a state or situation of the infant; generating state predictive determination data including at least one or more major factors which affect the state of the infant and state predictive determination reference values for each information based on the information stored in the database through the collection step for a predetermined time; predicting the state of the infant through comparison between the received information and the state predictive determination data as the information detected by the detection group is received in real time; and controlling at least one or more of a plurality of control devices installed in the product for an infant or disposed around the infant based on the predicted state of the infant.

[0013] According to the above-described embodiments of the present invention, by providing the system

and the method for providing an intelligent infant care service, which may collect data to detect a state of an infant, predict the state of the infant by applying an analysis model to the collected data, and control devices within an area where the infant exists based on the predicted state, it is possible to provide a good quality infant care service since various devices can be controlled according to the state of the infant.

[0014] In addition, according to the above-described embodiments of the present invention, it is possible to control devices by detecting and predicting the state of an infant, then measure a change in the state of the infant based on the collected data to detect the state of the infant, such that a directionality for subsequent device control can be produced, as well as predictability for the state of the infant can be improved.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[0015] The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a block diagram illustrating an entire configuration of an intelligent infant care service providing system by monitoring infants according to an embodiment of the present invention;

FIG. 2 is a block diagram illustrating a configuration of an infant care service providing system according to another embodiment of the present invention; and

FIG. 3 is a flowchart illustrating a process of providing a care service by predicting a state of the infants by the intelligent infant care service providing system according to embodiments of the present invention.

[DETAILED DESCRIPTION OF THE INVENTION]

[0016] Hereinafter, specific embodiments of the present invention will be described with reference to the accompanying drawings. The following detailed description is provided to contribute to a comprehensive understanding of a method, apparatus, and/or system described herein. However, these embodiments merely illustrative examples, and the present invention is not limited thereto.

[0017] In descriptions of the embodiments of the present invention, publicly known techniques that are judged to be able to make the purport of the present invention unnecessarily obscure will not be described in detail. Referring to the drawings, wherein like reference characters designate like or corresponding parts throughout the several views. In addition, the terms as used herein are defined by taking functions of the present disclosure into account and can be changed according to the custom or intention of users or operators. Therefore, definition of the terms should be made according to the entire disclosure set forth herein. In addition, the terminology used herein is for the purpose of describing particular embodiments only and is not intended to limit the present invention thereto.

[0018] Hereinafter, a system and a method for providing an intelligent infant care service by monitoring infants will be described with reference to the accompanying drawings.

[0019] FIG. 1 is a block diagram illustrating an entire configuration of an intelligent infant care service providing system by monitoring infants according to an embodiment of the present invention.

[0020] As shown in FIG. 1, the intelligent infant care service providing system by monitoring the infant according to an embodiment of the present invention may generally include a detection group 100, a data collection unit 120, a central control processor 160 and a control group 140.

[0021] Prior to the description of the embodiments of the present invention, each group may include at least one or more devices.

[0022] First, the detection group 100 may include at least one or more sensors 101 for detecting a state of an infant and an ambient environment of the infant, and at least one or more cameras 102 capable of generating an image by photographing the infant.

[0023] In particular, the detection group 100 according to the embodiment of the present invention may be installed around an infant or a product for an infant to sense a state related to the infant and an environment state.

[0024] In this case, the product for an infant may be implemented in a form of clothing worn by the infant. In this case, each sensor 101 of the detection group 100 may be mounted (or installed) on a wearable type of the infant clothing to sense the state of the infant for detecting information thereon.

[0025] In addition, the product for an infant may be various devices on which the infant can be seated, and examples thereof may include strollers, high chairs (dining chairs), walkers and the like. In this case, each sensor 101 of the detection group 100 may be mounted (or installed) on a predetermined portion of the product for an infant such as a seating part, thus to sense the state of the infant for detecting information thereon.

[0026] In an embodiment of the present invention, examples of information on the state of the infant sensed by the sensors 101 may include a movement, body temperature, and crying sound of the infant, which may be sensed by the sensors.

[0027] Additionally, each sensor 101 in the detection group 100 according to an embodiment of the present invention may sense the ambient environment for detecting information thereon. Herein, the ambient environment information may include ambient temperature, humidity, air quality information, and the like but it is not limited thereto.

[0028] Meanwhile, the camera 102 of the detection group 100 may be mounted on a predetermined portion of the product for an infant, and photograph specific por-

tions of the infant's body, such as a face portion and a body portion, to detect information related to the state of the infant.

[0029] In an embodiment of the present invention, the sensor 101 and the camera 102 corresponding to each device in the detection group 100 include a wireless communication interface (not illustrated), and may broadcast the detected information through the wireless communication interface.

[0030] In an embodiment of the present invention, the wireless communication interface may include infrared rays, Bluetooth, Bluetooth Low energy (Le), and the like, but it is not limited thereto.

[0031] In particular, in an embodiment of the present invention, the wireless communication interface may support wireless communication in a television white space (TVWS) band, and may be connected to the data collection unit 120 through a TVWS channel to transmit the detected information to the data collection unit 120.

[0032] Meanwhile, in an embodiment of the present invention, each sensor 101 may be an IoT-based device that measures body state information of the infant on the body temperature, weight, and motion of the infant, measures the ambient environment information of a device for an infant, and then broadcasts the measured information. In this case, the data collection unit 120 may receive and collect the body state information and ambient environment information of the infant broadcast from a plurality of detection groups 100.

[0033] The data collection unit 120 may be connected to the detection groups 100 through wireless communication to collect images of the infant, the body state information, and ambient environment information from the detection groups 100, and store the same in a database 122.

[0034] Meanwhile, the database 122 may store state change information of the infant through control of the control group 140. Herein, the state change information of the infant may be generated based on information collected by the data collection unit 120 after performing control of the devices in the control group 140 according to the predicted state of the infant.

[0035] Accordingly, information on the controlled devices may be mapped to the state change information of the infant.

[0036] In an embodiment of the present invention, the state change information of the infant may be generated by the central control processor 160.

[0037] The control group 140 is a device that operates based on an external control signal according to the state or situation of the infant, and may include a vibrator 142, a sound transmitter 144, and various electronic devices 146 in a home in which the infant lives.

[0038] The electronic devices 146 in the home are various devices connected through a home network, and examples thereof may include an air purifier, a humidifier, an automatically controlled curtain, an air conditioner, an acoustic device, a television, and the like, but it is not limited thereto.

[0039] Meanwhile, the vibrator 142 or the sound transmitter 144 may be installed in a stroller, high chair, walker, bouncer, crib, cradle, and the like, which are products for an infant, to transmit a predetermined vibration and sound. An infant state prediction unit 150 may extract major factors that can predict the state of the infant through big data analysis on information collected for a predetermined time, that is, the information stored in the database 122, and predict the state of the infant based on a change in the extracted major factors.

[0040] Herein, the major factors may be extracted through statistical analysis, correlation analysis, regression analysis, variance analysis, principal component analysis, and the like for an amount of change in the information collected for the predetermined time. Specifically, the major factors may be extracted by information that has been statistically changed within a predetermined threshold range among the collected information, extracted by information that is relatively increasing or decreasing based on the amount of change in the collected information, or may be extracted by predicting based on a mathematical relational equation defined based on the collected information.

[0041] The infant state prediction unit 150 may predict the state of the infant based on the major factors extracted by the above-described method. Specifically, by using the major factors, the infant state prediction unit 150 may predict the current state and situation of the infant based on a change in the major factors.

[0042] Meanwhile, the infant state prediction unit 150 according to an embodiment of the present invention may predict the state and situation of the infant based on data collected in relation to the infant. Specifically, the infant state prediction unit 150 takes factors related to the state of the infant as an input layer, such as crying sound, face image, and behavior pattern, from the collected data, and takes final state data of the infant as an output layer final, such as data input by a guardian to form a hidden layer by calculating weights for each factor, and then generates a prediction model for predicting the state of the infant based on the input layer and the hidden layer for each personal information of the infant, such as an age, gender, and residential area, thereby it is possible to predict the state or situation of the infant by applying the detected data to the input layer of the generated prediction model.

[0043] The central control processor 160 may control each device in the control group 160 based on the predicted state or situation of the infant. Specifically, the central control processor 160 may operate a device (such as a vibrator, sound transmitter, etc.) installed in the product for an infant or an electronic device installed around the infant by applying a control signal thereto.

[0044] To this end, the central control processor 160 according to an embodiment of the present invention may operate with being connected to each device in the control group 160 through wired or wireless communication.

Specifically, the central control processor 160 may include a connection interface 162 and apply a control signal to each device connected through the connection interface 162 to operate each device.

[0045] In an embodiment of the present invention, the connection interface 162 may include a wired means such as a USB port and a serial port, etc., and a wireless means such as Bluetooth, Bluetooth Le, and infrared rays, etc.

[0046] Meanwhile, in an embodiment of the present invention, the intelligent infant care service providing system may further include a state change detection unit 180 configured to, after performing control for each device in the control group 140 by the control signal generated on the basis of the situation or state of the infant predicted by the infant state prediction unit 150, detect state change information of the infant based on the information collected through the data collection unit 120.

[0047] In this case, as the state change information is received from the state change detection unit 180, the central control processor 160 may store the same in the database 122, and determine a device control policy according to the change of major factors based on the state change information of the infant stored in the database 122, to perform control of each device in the control group 140 based on the determined device control policy.

[0048] In an embodiment of the present invention, the control policy may include sound intensity control, sound on/off control, sound type control, vibration on/off control, vibration intensity control, control for electronic devices, etc. in the sound transmission part, but it is not limited thereto.

[0049] In an embodiment of the present invention, the data collection unit 120 may match information received from the detection group 100 with personal identification information of the infant and collection time information, and store the same in the database 122.

[0050] Herein, the personal identification information of the infant may include the age, sex, medical history, etc., of the infant, and the collection time information may include time data at the time of collection.

[0051] Meanwhile, in an embodiment of the present invention, the infant state prediction unit 150 may predict the state or situation of the infant by using various pieces of information. Specifically, the infant state prediction unit 150 may recognize the state or situation of the infant by determining the entire situation in consideration of the ambient environment information, the medical history of the infant, information related to the collected states and the like.

[0052] To this end, the infant state prediction unit 150 may understand the states such as behavior, emotion, and sensibility of the infant based on the information collected by the data collection unit 120, and then predict intention of the infant based on the states. Specifically, the infant state prediction unit 150 may predict the intention of the infant through human-centered computing (HCC)-based learning of multi-modal data, and determine the state or situation of the infant based on the predicted intention. For example, the infant state prediction unit 150 may diagnose pain, such as crying, and understand the intention of the infant in various environments.

[0053] Meanwhile, the central control processor 160 may provide a communication service capable of providing information on the situations or the state of the infant predicted by the infant state prediction unit 150 to a parental terminal 50 by using predetermined information of guardians.

[0054] In addition, the central control processor 160 may provide a brain signal-based sympathetic service according to the predicted situation or state of the infant, and a content recommendation service by analyzing effects of improving brain signal cognitive abilities that reflect language, memory, numeracy, logic, and creativity, to recommend appropriate contents. Specifically, the central control processor 160 may provide the brain signal-based sympathetic service and appropriate contents for improving the brain signal cognitive abilities through control of at least one or more of the vibrator 142, the sound transmitter 144, and the electronic device 146 in the control group 140 according to the predicted situation or state of the infant.

[0055] Meanwhile, in the intelligent infant care service providing system according to the embodiment of the present invention as described above, at least two or more of the data collection unit 120, the infant state prediction unit 150, and the central control processor 160 may be implemented in a form of one chip.

[0056] An intelligent infant care service providing system by monitoring infants according to another embodiment of the present invention may further include, as illustrated in FIG. 2, a remote monitoring infant care service providing device 200 in the components of FIG. 1.

[0057] In this case, the data collection unit 120 may be connected to the remote monitoring infant care service providing device 200 through a wireless communication network, and the remote monitoring infant care service providing device 200 may be connected with the central control processor 160 through a wired or wireless communication network.

[0058] In the intelligent infant care service providing system according to another embodiment of the present invention, the remote monitoring infant care service providing device 200 may be implemented as a server that can be connected through the wired or wireless communication network.

[0059] At this time, the remote monitoring infant care service providing device 200 may receive information detected by the detection group 100 through operating in conjunction with the data collection unit 120, store the same in the database 122, and predict the situation or state of the infant based on the received information, then may transmit control information to the central control processor 160 based on the predicted situation or state.

[0060] That is, the intelligent infant care service providing system according to another embodiment of the

present invention may include a database 122 operating in conjunction with the remote monitoring infant care service providing device 200 that performs the function of the infant state prediction unit 150.

[0061] The central control processor 160 may control each device in the control group 140 based on the control information. In this case, the central control processor 160 may be a device that provides an artificial intelligence agent service installed in the home.

[0062] That is, the device that provides the artificial intelligence agent service may be connected to various home networks to control various electronic devices 146 connected to a home network, as well as may control operations of devices installed in the product for an infant, such as the vibrator 142, the sound transmitter 144 and the like.

[0063] In addition, the remote monitoring infant care service providing device 200 according to another embodiment of the present invention may perform the functions of the infant state prediction unit 150, the state change detection unit 180, and the like shown in FIG. 1.

[0064] A process of predicting the state of the infant, and providing necessary services to the infant based on the same by the intelligent infant care service providing system having the above-described configuration will be described with reference to FIG. 3.

[0065] FIG. 3 is a flowchart illustrating a process of providing a care service by predicting the state of the infant by the intelligent infant care service providing system according to embodiments of the present invention.

[0066] As shown in FIG. 3, an infant care service process may perform a collection step (S300) through operation of the components in conjunction with each other in the intelligent infant care service providing system according to embodiments of the present invention.

[0067] The collection step (S300) is to collect information for predicting the state of the infant, and may include collecting information detected in the detection group 100 and state change information of the infant after performing control of the control group 140.

[0068] In addition, the collection step (S300) may include collecting the detected information for predicting the current state of the infant in a predetermined period, such as weekly, monthly, or in real time.

[0069] The information collected through the collection step (S300) may be stored and managed in the database 122.

[0070] Next, in the process of providing an infant care service, a state predictive determination data generation step (S310) may be performed through each component in the intelligent infant care service providing system according to embodiments of the present invention.

[0071] The state predictive determination data generation step (S310) may be performed through big data analysis on information collected for a predetermined period. Specifically, in the state predictive determination data generation step (S310), after performing control of an amount of change in each information and the devices in the control group 140 for a predetermined period, state predictive determination data may be generated based on the amount of change in the state of the infant.

[0072] In other words, in the state predictive determination data generation step (S310), the major factors which affect the state of the infant are extracted from the information collected for the predetermined period, and a state predictive determination reference value (e.g., an average value for each detected information for the predetermined period) may be calculated to generate state predictive determination data.

[0073] Thereafter, in the process of providing an infant care service, a device control policy establishment step (S320) may be performed through each component of the intelligent infant care service providing system according to embodiments of the present invention.

[0074] In the device control policy establishment step (S320), after performing control of: an amount of change in each collected information for a predetermined period; information of each device in the control group 140 according to the amount of change; and the devices in the control group 140, the device control policy may be established based on the change in the state of the infant, for example.

[0075] Specifically, the device control policy establishment step (S320) may establish a device control policy according to an amount of change in the major factors based on the state change information of the infant stored in the database 122.

[0076] Next, in a process of predicting the state of the infant, an infant state prediction step (S330) may be performed based on information collected in real time through each component of the intelligent infant care service providing system according to embodiments of the present invention.

[0077] In the infant state prediction step (S330), the state of the infant may be predicted through comparison between the major factors in the state predictive determination data, the state predictive determination reference value, and information detected by the detection group 100 in real time.

[0078] That is, in the infant state prediction step (S330), the state of the infant may be predicted by checking an amount of change in information corresponding to the major factors among the information detected in real time by the detection group 100 to determine whether it is out of a threshold range, and performing comparison between the information detected in real time and the state predictive determination reference value.

[0079] Thereafter, in the process of providing an infant care service, a control step (S340) of controlling the devices in the control group 140 according to the state of the infant predicted through each configuration of the intelligent infant care service providing system according to the embodiments of the present invention may be performed.

[0080] In the control step (S340), if the amount of change in the major factors is out of the predetermined

threshold range, each device of the control group 140 may be operated according to the device control policy in the control group 140 matched with the major factors.

[0081] Then, in the process of providing an infant care service, after performing control of the devices in the control group 140 through each configuration of the intelligent infant care service providing system according to the embodiments of the present invention, an update step (S345) of updating the information stored in the database 122 by checking the change in the state of the infant may be performed.

[0082] Thereafter, in the process of providing an infant care service, a notification step (S350) of notifying the state of the infant predicted through each component of the intelligent infant care service providing system according to the embodiments of the present invention may be performed.

[0083] A notification step (S350) is operated when the state of the infant predicted through the comparison between the information detected in real time and the state predictive determination reference value is an emergency or a state requiring an external care service, and state information of the infant may be transmitted to the parental terminal 50 using the pre-registered information.

[0084] In addition, in the notification step (S350), when the state of the infant predicted through the comparison between the information detected in real time and the state predictive determination reference value is the emergency or the state requiring an external care service, the state information of the infant may be transmitted to 119 Rescue Center which provides a pre-registered emergency care service, hospitals and the like.

[0085] The above description of the present disclosure is provided for the purpose of illustration, and it would be understood by those skilled in the art that various changes and modifications may be made without changing technical conception and essential features of the present disclosure. Thus, it is clear that the above-described embodiments are illustrative in all aspects and do not limit the present disclosure. For example, each component described to be of a single type can be implemented in a distributed manner. Likewise, components described to be distributed can be implemented in a combined manner.

[0086] The scope of the present disclosure is defined by the following claims rather than by the detailed description of the embodiment. It shall be understood that all modifications and embodiments conceived from the meaning and scope of the claims and their equivalents are included in the scope of the present disclosure.

[Description of Reference Numerals]

[0087]

50: Parental terminal
100: Detection group
101: Sensor
102: Camera
103: Wireless communication interface
120: Data collection unit
122: Database
160: Central control processor
162: Connection interface
180: State change detection unit
200: Remote monitoring infant care service providing device

Claims

1. A system for providing an intelligent infant care service comprising:

   a detection group including a plurality of devices which are installed around an infant or a product for an infant to detect information for predicting a state of the infant;
   a data collection device configured to collect the information detected by the plurality of devices in the detection group;
   a control group including a plurality of control devices which are installed around the product for an infant or the infant, and are operated based on a control signal received through wired or wireless communication; and
   a central control processor configured to predict a state or situation of the infant based on the information collected by the data collection device and operate at least one or more control devices in the control group by generating the control signal based on the predicted situation or state,
   wherein the central control processor generates state predictive determination data including at least one or more major factors which affect the state of the infant and state predictive determination reference values for each information based on the information collected for a predetermined time, and predicts the state of the infant through comparison between the received information and the state predictive determination data, as the information detected by the detection group is received in real time.

2. The system for providing an intelligent infant care service according to claim 1, wherein the central control processor extracts at least one or more major factors which affect the state of the infant on the basis of an amount of change for each information collected for a predetermined time and a correlation between pieces of information based on the amount of change for each information, and generates reference values for each information by calculating an average value of the measured values for each information to produce the state predictive determina-

tion data.

3. The system for providing an intelligent infant care service according to claim 1, wherein the central control processor controls the at least one or more control devices in the control group by predicting the state of the infant, then generates state change information of the infant based on the information detected by the detection group, and stores the information in a database by matching control information on the devices in the control group, which affects the state change information of the infant, with the state change information of the infant.

4. The system for providing an intelligent infant care service according to claim 3, wherein the central control processor generates a device control policy for each information change based on the control information on the devices in the control group, which affects the state change information of the infant and is stored in the database for a predetermined time, and the state change information of the infant, and controls at least one of the plurality of control devices based on the device control policy corresponding to the major factors or information in the state predictive determination data used to predict the state of the infant.

5. A method for providing an intelligent infant care service comprising:

storing and collecting information detected by a detection group including a plurality of devices which are installed around a product for an infant or the infant, and are configured to predict a state or situation of the infant;
generating state predictive determination data including at least one or more major factors which affect the state of the infant and state predictive determination reference values for each information based on the information stored in the database through the collection step for a predetermined time;
predicting the state of the infant through comparison between the received information and the state predictive determination data as the information detected by the detection group is received in real time; and
controlling at least one or more of a plurality of control devices installed in the product for an infant or disposed around the infant based on the predicted state of the infant.

6. The method for providing an intelligent infant care service according to claim 5, wherein the step of generating the state predictive determination data comprising: extracting at least one or more major factors which affect the state of the infant on the basis of an amount of change for each information stored in the database and a correlation between pieces of information based on the amount of change for each information; and
generating reference values for each information by calculating an average value of the measured values for each information to produce the state predictive determination data.

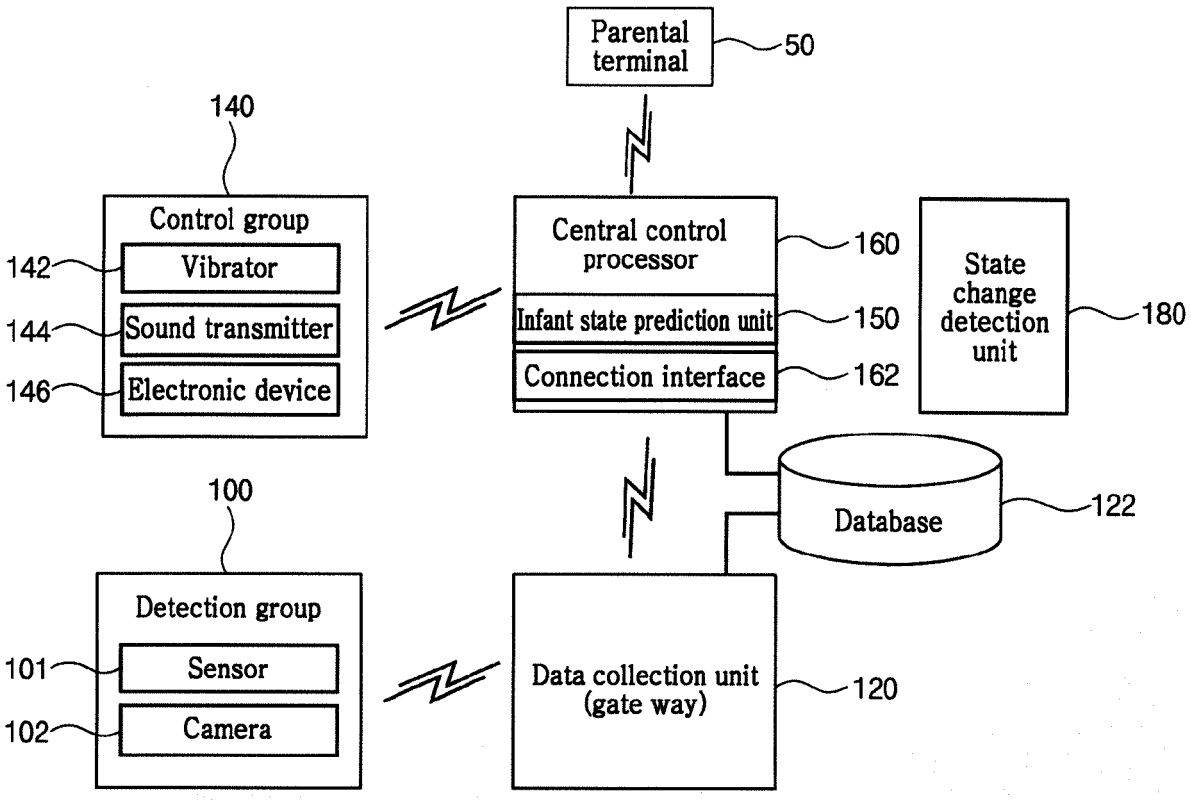
7. The method for providing an intelligent infant care service according to claim 5, after the step of controlling, further comprising:

generating state change information of the infant based on the information detected by the detection group; and
storing the information in the database by matching control information on the devices in the control group, which affects the state change information of the infant, with the state change information of the infant.

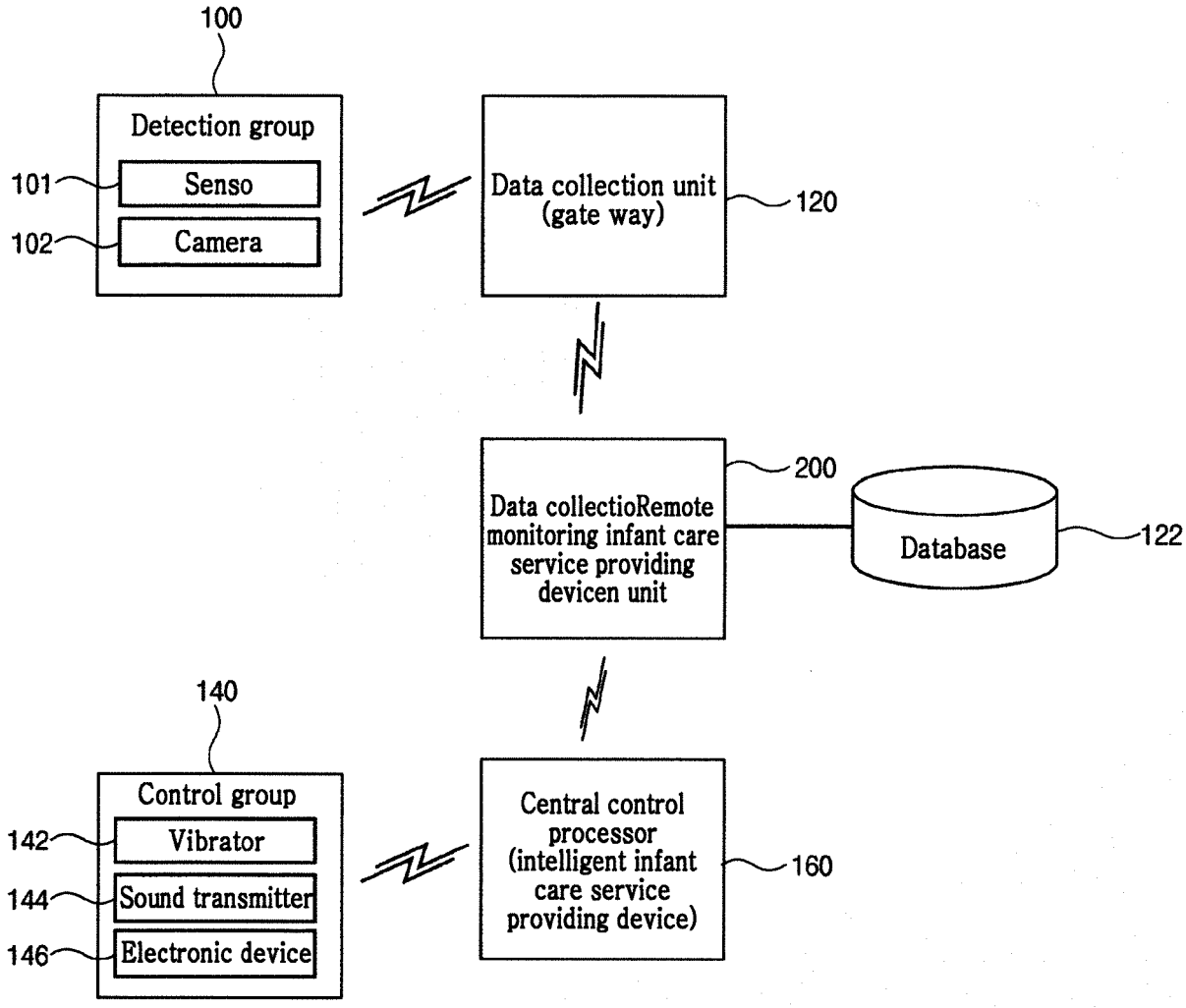
8. The method for providing an intelligent infant care service according to claim 7, further comprising:

generating a device control policy for each information change based on the control information on the devices in the control group, which affects the state change information of the infant and is stored in the database for a predetermined time, and the state change information of the infant,
wherein the step of controlling comprises controlling an electronic device installed in the product for an infant or disposed around the product for an infant based on the device control policy corresponding to the major factors or information in the state predictive determination data used to predict the state of the infant.

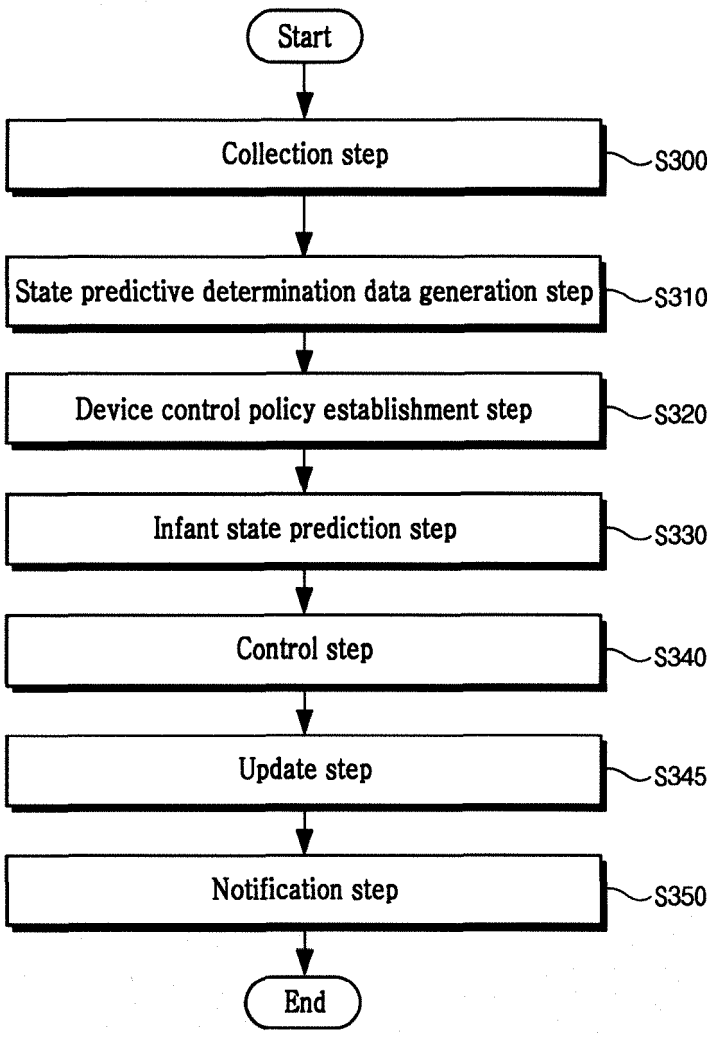
[FIG.1]


Parental terminal
50
140
Control group
142
Vibrator
144
Sound transmitter
146
Electronic device
Central control processor
160
Infant state prediction unit
150
Connection interface
162
State change detection unit
180
Database
122
100
Detection group
101
Sensor
102
Camera
Data collection unit (gate way)
120

[FIG.2]


100
Detection group
101
Senso
102
Camera
Data collection unit
(gate way)
120
200
Data collectioRemote
monitoring infant care
service providing
devicen unit
Database
122
140
Control group
142
Vibrator
144
Sound transmitter
146
Electronic device
Central control
processor
(intelligent infant
care service
providing device)
160

[FIG.3]


Start
Collection step
S300
State predictive determination data generation step
S310
Device control policy establishment step
S320
Infant state prediction step
S330
Control step
S340
Update step
S345
Notification step
S350
End

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EUROPEAN SEARCH REPORT

Application Number
EP 20 21 3735

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	10 June 2021	Herry, Tzvetanka

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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