NAVIGATION SAFETY INTELLIGENT MANAGEMENT SYSTEM AND A METHOD THEREOF

BACKGROUND

Field of the Invention

[0001] The present invention relates to a navigation safety management system, and more particularly to a navigation safety intelligent management system a method thereof.

Description of Related Art

[0002] With the prosperity of the economy and the progress of the times, global trade has witnessed rapid development. In recent years, in addition to becoming faster and larger, the number of ships worldwide has also increased substantially. With the number of ships increasing significantly while the shipping routes remain unchanged, there has been a growing number of maritime accident cases, and ports and the adjacent waters are particularly the areas where maritime accidents are most likely to occur. When ships are navigating in ports, they are surrounded by the largest number of vessels, the traffic is at its busiest, and moreover, being close to the land, the waterways are relatively narrow, making accidents extremely prone to happen. Therefore, high-risk navigation areas are usually regarded as congested waters. Once an accident occurs to a ship in these congested waters, it will not only cause casualties and property losses, but also have a major negative impact on the ecological environment and people's livelihoods.

[0003] Most maritime accident investigation reports attribute the causes mainly to human errors, which typically include: the lack of situational awareness among the involved seafarers, negligence in lookout, insufficient skills, and insufficient cockpit manpower. Therefore, effectively reducing human errors can prevent the occurrence of maritime accidents. To prevent

such accidents, various operators install closed-circuit television (CCTV), voyage data recorders (VDR), and electronic chart display and information systems (ECDIS) in the cockpit, and record the navigation tracks, storing them in cloud folders for the management side to randomly sample, view, and examine whether the behaviors of the ships in congested waters comply with the regulations.

[0004] However, due to the limited bandwidth of satellite networks, it takes 3 to 5 days just to upload the ship data to the cloud. After the upload is completed, the onshore management side still needs to download the data and record it into videos before it can be reviewed by the shore-based managers, and each video is approximately 1.5 hours long, it can be seen that the current approach consumes a great deal of time. Moreover, because the videos are too long, the number of videos that can be reviewed each time is small, resulting in an overall low review rate, a decline in the overall sampling ratio, and an inability to ensure that most of the ships under management comply with the regulations.

SUMMARY

[0005] The present invention provides a navigation safety intelligent management system and a method thereof, and the objective of which is to provide a system for managing navigation safety through artificial intelligence.

[0006] To achieve the above objective, a navigation safety intelligent management system in accordance with the present invention comprises:

[0007] a video recording module including at least one video recorder, the video recorder being used to capture at least one behavior data in a cockpit;

[0008] a camera module including at least one camera, the camera being used to capture at least one person data in the cockpit;

[0009] a standard behavior determination module, including a person

recognition unit, a behavior recognition unit and a comparison unit, wherein the standard behavior determination module is informationally connected to the video recording module and the camera module, the person recognition unit is used to receive the person data, the person recognition unit is used to obtain a first notification according to the person data, the behavior recognition unit is used to receive the behavior data, the behavior recognition unit is used to obtain a second notification according to the behavior data, the comparison unit is used to receive the first notification and the second notification, at least one behavior criterion is pre-stored in the comparison unit and is used to compare the first notification and the second notification to obtain at least one record information and at least one warning information; and

[0010] a management module being informationally connected to the standard behavior determination module and including a shore management terminal and an on-board management terminal, wherein the shore management terminal and the shipboard management terminal are informationally connected to the comparison unit to receive the record information and the warning information, and the record information and the warning information include short videos less than one minute long, screenshots and text files.

[0011] More specifically, the standard behavior determination module includes at least one artificial intelligence recognition host.

[0012] More specifically, the person recognition unit includes a database, and the database has a plurality of personnel files, and the personnel files include personnel photos, names and job titles.

[0013] More specifically, the first notification includes: recognizing captain, and issuing a captain notification corresponding to face recognition of the captain.

[0014] More specifically, the second notification includes: recognizing at least three people, and issuing a number-of-people notification

corresponding to recognition of number of people.

[0015] More specifically, the second notification includes: recognizing the use of each navigation instrument, and issuing a navigation instrument notification corresponding to movements of personnel in a navigation instrument area.

[0016] More specifically, the second notification includes: using a telescope, and issuing a telescope notification corresponding to movements of personnel using the telescope.

[0017] More specifically, the second notification includes: using radio equipment, and issuing a radio notification corresponding to movements of personnel using the radio equipment.

[0018] More specifically, the behavior criterion include: a time criterion, a human figure criterion, a body-parts-of-personnel criterion, a personnel criterion, a motion criterion and an area criterion.

[0019] A method of using the navigation safety intelligent management system as mentioned above comprises:

[0020] Step S1, detecting water area;

[0021] Step S2, determining whether it is a congested water area, executing step S3 if it is a congested water area; and executing step S1 if it is not a congested water area;

[0022] Step S3, collecting the person data and the behavior data, and bringing the person data and the behavior data into the standard behavior determination module to obtain the first notification and the second notification; comparing the first notification, the second notification with the behavior criterion, executing step S4 if the first notification and the second notification conform to the behavior criterion; and executing step S5 if the first notification and the second notification do not conform to the behavior criterion;

[0023] Step S4, obtaining the record information, transmitting the record information to the management module, and executing step S1; and

[0024] Step S5, obtaining the record information and the warning information, transmitting the record information and the warning information to the management module, and executing step S1.

[0025] The present invention provides the person data and the behavior data through at least one camera and at least one video recorder, and transmits the person data and the behavior data to the standard behavior determination module. The artificial intelligence recognition host recognizes facial features based on the person data to obtain the first notification. The behavior data is used to recognize the number of personnel, body parts of personnel, movements of personnel, and the areas where the personnel are located. By analyzing the behaviors of the personnel in the cockpit, the second notification is obtained. The first and second notifications are compared one by one with at least one pre-stored behavior criterion in the comparison unit, so that the comparison unit sends out the record information or the warning information and transmits it back to the management module, which omits the time for uploading to the cloud and video production, reducing time costs and labor costs. The management module can receive the warning information in real time, increasing the inspection rate and ensuring that the ships under its jurisdiction comply with navigation safety regulations. Moreover, the record information is saved in digital mode and can be saved permanently.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026]

FIG. 1 is a schematic diagram of the system architecture of the navigation safety intelligent management system and its method of the present invention;

Figure 2 is a flowchart of the method of the navigation safety intelligent management system and its method of the present invention; and

Figure 3 is a schematic diagram of information transmission of the navigation safety intelligent management system and its method of the present invention.

DETAILED DESCRIPTION

[0027] Please refer to Figure 1 and Figure 3, the present invention provides a navigation safety intelligent management system, which includes: a camera module 10, a video recording module 20, a standard behavior determination module 30, and a management module 40.

[0028] The camera module 10 includes at least one camera 11, and the camera 11 is installed in the cockpit. The camera module 10 is used to shoot the personnel in the cockpit to obtain at least one person data 12. In this embodiment, the camera module 10 includes two cameras 11, which are installed in the cockpit and ensure that the cameras 11 can shoot a working area in the cockpit. The person data 12 can be multiple photos.

[0029] The video recording module 20 includes at least one video recorder 21, and the video recorder 21 is installed in the cockpit. The video recording module 20 is used to record the images in the cockpit to obtain at least one behavior data 22. Since the current photography and video recording functions can be included in the same device, the video recorder 21 of the video recording module 20 and the camera 11 of the camera module 10 can be the same or different devices. In this embodiment, the camera module 10 and the video recording module 20 are different devices, but this is not limited thereto. There are two cameras 11 installed, and one video recorder 21 is installed in the cockpit to provide a wider viewing angle to shoot the working area. In this embodiment, the behavior data 22 can be multiple videos.

[0030] The standard behavior determination module 30 is informationally connected to the video recording module 20 and the camera module 10. The standard behavior determination module 30 includes at least one artificial intelligence recognition host 31, which is set in the cockpit

and used to receive the person data 12 and the behavior data 22.

[0031] In this embodiment, the artificial intelligence recognition host 31 includes a person recognition unit 32, a behavior recognition unit 33, and a comparison unit 34. The person recognition unit 32 includes a database 321, the database 321 has a plurality of personnel files pre-stored therein, and the personnel files include personnel photos, names, and job titles. The person recognition unit 32 performs human figure recognition according to the person data 12 to judge whether there is a human figure in the person data 12. The determination result of whether there is a human figure forms human figure information. If a human figure is judged, a human figure image is captured. The person recognition unit 32 is used to perform personnel recognition on the captured human figure image, compare the face in the human figure image with the pre-stored personnel photos to obtain the personnel name and job title, and then determine the identity of the personnel in the human figure image, that is, form personnel information. The person recognition unit 32 is used to calculate the length of time the personnel appears in the working area according to the personnel information, that is, form time information. The person recognition unit 32 is also used to issue a first notification according to the human figure information, the personnel information, and the time information. In this embodiment, the first notification includes a captain notification 322, but it is not limited thereto. The captain notification 322 is the result of recognizing whether the face in the human figure image conforms to the captain's face recognition and the length of time the personnel conforming to the captain's photo appears in the working area.

[0032] The behavior recognition unit 33 is used to perform human figure recognition according to the behavior data 22 to judge whether there is a human figure in the behavior data 22. The determination result of whether there is a human figure forms the human figure information. If a human figure is judged, the behavior recognition unit 33 is used to calculate the

human figure image, and the result of calculating the number of human figures in the human figure image forms a number of people information. The behavior recognition unit 33 is used to calculate the length of time the human figure image appears in the working area according to the number of people information, that is, form the time information. The behavior recognition unit 33 is also used to issue a second notification according to the human figure information, the number of people information, and the time information. In this embodiment, the second notification includes a number-of-people notification 331, and the number-of-people notification 331 is to recognize the number of human figures in the human figure image and the length of time the human figure image appears in the working area.

[0033] The behavior recognition unit 33 is used to perform human figure recognition according to the behavior data 22 to judge whether there is a human figure in the behavior data 22. The determination result of whether there is a human figure forms the human figure information. If a human figure is judged, the behavior recognition unit 33 is used to judge the position of the body part in the human figure image. The determination result forms a part information. The behavior recognition unit 33 can detect the movement trajectory of the position of the body part in the human figure image according to the part information, and form a motion trajectory information for the movement trajectory of the position of the body part. The behavior recognition unit 33 is used to detect the personnel conforming to the motion trajectory information appearing in the working area, and the behavior recognition unit 33 is also used to issue the second notification according to the human figure information, the part information, and the motion trajectory information. In this embodiment, the second notification includes a radio notification 334 and a telescope notification 333. The radio notification 334 is the result of recognizing the motion of the human figure image using radio equipment, and the telescope notification 333 is the result of recognizing the motion of the human figure image using a telescope.

[0034] The behavior recognition unit 33 performs human figure recognition according to the behavior data 22 to judge whether there is a human figure in the behavior data 22. The determination result of whether there is a human figure forms the human figure information. If a human figure is judged, the behavior recognition unit 33 is used to judge the area where the human figure image is located, and form an area information for the area where the human figure image is located. The behavior recognition unit 33 judges the position of the body part in the human figure image according to the area information, and the determination result forms the part information. The behavior recognition unit 33 judges the movement trajectory of the position of the body part in the human figure image according to the part information to form the motion trajectory information. The behavior recognition unit 33 is also used to issue the second notification according to the human figure information, the area information, the part information, and the motion trajectory information. In this embodiment, the second notification also includes a navigation instrument notification 332. The navigation instrument notification 332 is to recognize the motion of the human figure image using each navigation instrument in a navigation instrument area according to the human figure information, the area information, the part information, and the motion trajectory information. Specifically, the area information means that the personnel's hands are located in the navigation instrument area, the part information means that the personnel's hands are located in the navigation instrument area, and the motion trajectory information is to determine whether the action of operating the navigation instrument is performed by judging the movement trajectory of the personnel's hands.

[0035] In this embodiment, the first notification includes the captain notification 322, and the second notification includes: the number-of-people notification 331, the navigation instrument notification 332, the telescope notification 333, and the radio notification 334. It is also worth noting that

the working area is the entire area that can be photographed by the camera module 10 and the video recording module 20. Therefore, in the captain notification 322 and the number-of-people notification 331, there is no determination of the area information, because the human figure information already represents that the human figure image appears in the working area. However, in the navigation instrument notification 332, the area information is to judge whether the personnel are located in the navigation instrument area. The navigation instrument area is one of the areas in the working area, so the navigation instrument area needs to be further defined in the working area.

[0036] At least one behavior criterion 341 is pre-stored in the comparison unit 34. The behavior criterion 341 includes six criteria: a time criterion, a human figure criterion, a body-parts-of-personnel criterion, a personnel criterion, an motion criterion, and an area criterion. The user can set a single criterion to cross-compare with the first notification and the second notification according to actual needs, or set a condition by combining multiple criteria to cross-compare with the first notification and the second notification. The comparison unit 34 collects the first notification and the second notification and compares them one by one with the behavior criterion 341. After comparison, if the content of the first notification or the second notification conforms to the behavior criterion 341, at least one record information 342 is formed; if the content of the first notification or the second notification does not conform to the behavior criterion 341, at least one warning information 343 and the record information 342 are formed. The standard behavior determination module 30 is used to transmit the record information 342 and the warning information 343 to the management module 40.

[0037] The management module 40 is informationally connected to the standard behavior determination module 30 and includes an onshore management terminal 41 and an on-board management terminal 42. The

onshore management terminal 41 and the on-board management terminal 42 are informationally connected to the standard behavior determination module 30. The onshore management terminal 41 and the on-board management terminal 42 are used to receive the record information 342 and the warning information 343. In this embodiment, the record information 342 and the warning information 343 include short videos less than one minute in length, screenshots, and text files. The record information 342 and the warning information 343 can be permanently saved and can also be output by the management module 40 in the form of reports to improve work efficiency. The onshore management terminal 41 is an onshore management platform of the operator on land. Through the record information 342 and the warning information 343, the onshore management terminal 41 can quickly know whether the ships under its jurisdiction conform to the regulations, improve the overall inspection rate, and strengthen navigation safety, saving the time-consuming process of uploading and reviewing long videos. The on-board management terminal 42 is an on-board management platform installed on the ship. The on-board management terminal 42 collects the record information 342 and the warning information 343. When the on-board management terminal 42 receives the warning information 343, it can emit a warning sound or a warning indication, etc., achieving the effect of real-time warning, so as to regulate the ships under its jurisdiction to conform to navigation safety and reduce the occurrence of maritime accidents.

[0038] Each of the criterion in the behavior criterion 341 can be changed according to different sea area conditions to meet the regulations of various operators. In this embodiment, the behavior criterion 341 are the regulations in congested waters. The behavior criterion 341 includes the condition formed by the combination of the human figure criterion, the time criterion, and the personnel criterion. For example, the above condition is that a human figure with the captain's face appears in the working area, and the

time of appearance in the working area must be maintained for five minutes. In another case, the behavior criterion 341 includes the condition formed by combination of the human figure criterion and the time criterion. For example, the above condition is that the number of personnel in the working area must be greater than or equal to three and must be maintained for 10 minutes. The behavior criterion 341 includes the condition formed by combination of the human figure criterion, the body-parts-of-personnel criterion, the motion criterion, and the area criterion. For example, the above condition is that the body part of the human figure need to have a movement trajectory in the navigation instrument area to know that there are personnel using the navigation instrument. The behavior criterion 341 include the condition formed by combination of the human figure criterion, the body-parts-of-personnel criterion, and the motion criterion. For example, the above condition is that the body part of the human figure need to have a movement trajectory of raising the hand and turning the head to know that there are personnel using a telescope for lookout. The behavior criterion 341 includes the condition formed by combination of the human figure criterion, the body-parts-of-personnel criterion, and the motion criterion. For example, the above condition is that the body part of the human figure need to have a movement trajectory of raising the hand and opening and closing the mouth to know that there are personnel using a radio for communication. These behavior criterion 341 are pre-stored in the comparison unit 34. The comparison unit 34 compares one by one whether the first and second notifications conform to the behavior criterion 341, and issues the record information 342 or the warning information 343 one by one according to the first and second notifications.

[0039] In this embodiment, the captain notification 322 is compared with the behavior criterion 341 of whether the captain is in the working area and the time is maintained for five minutes. If it conforms, the comparison unit 34 issues the record information 342; if it does not conform (that is, it means

that the captain leaves the working area and the time exceeds five minutes), the comparison unit 34 issues the warning information 343 and the record information 342.

[0040] In this embodiment, the number-of-people notification 331 is compared with the behavior criterion 341 of whether the number of personnel in the working area is greater than or equal to three and must be maintained for 10 minutes. If it conforms, the comparison unit 34 issues the record information 342; if it does not conform, the comparison unit 34 issues the warning information 343 and the record information 342.

[0041] In this embodiment, the navigation instrument notification 332 is compared with the behavior criterion 341 of whether there are personnel using the navigation instruments interactively in the navigation instrument area. If it conforms, the comparison unit 34 issues the record information 342; if it does not conform, the comparison unit 34 issues the warning information 343 and the record information 342.

[0042] In this embodiment, the telescope notification 333 is compared with the behavior criterion 341 of whether there are personnel using a telescope for lookout. If it conforms, the comparison unit 34 issues the record information 342; if it does not conform, the comparison unit 34 issues the warning information 343 and the record information 342.

[0043] In this embodiment, the radio notification 334 is compared with the behavior criterion 341 of whether there are personnel using a radio for communication. If it conforms, the comparison unit 34 issues the record information 342; if it does not conform, the comparison unit 34 issues the warning information 343 and the record information 342.

[0044] An embodiment of a method of using the navigation safety intelligent management system of the present invention, please refer to Figure 2, includes:

[0045] Step S1, detecting the water area;

[0046] Step S2, judging whether it is a congested water area and starting

the navigation safety intelligent management system. Executing step S3 if it is a congested water area; and executing step S1 if it is not a congested water area;

[0047] Step S3, by the camera module 10 and the video recording module 20, collecting the person data 12 and the behavior data 22, and storing the person data 12 and the behavior data 22 into the artificial intelligence recognition host 31, so as to obtain the captain notification 322, the number-of-people notification 331, the navigation instrument notification 332, the telescope notification 333, and the radio notification 334, and form the first notification and the second notification; bringing the first and second notifications into the comparison unit 34 to compare with at least one behavior criterion 341; by the comparison unit 34, comparing the first and second notifications with the pre-stored behavior criterion 341, executing step S4 if it conforms to the behavior criterion 341; executing step S5 if it does not conform to the behavior criterion 341.

[0048] comparing whether the captain notification 322 conforms to the behavior criterion 341 that the captain is in the working area for five minutes, executing step S4 if it conforms, and executing step S5 if it does not conform when the captain leaves the working area for more than five minutes;

[0049] comparing whether the number-of-people notification 331 conforms to the behavior criterion 341 that there are at least three personnel in the working area within ten minutes, executing step S4 if it conforms, and executing step S5 if it does not conform when the number of personnel in the working area is less than three for more than ten minutes;

[0050] comparing whether the navigation instrument notification 332 conforms to the behavior criterion 341 that there are personnel using the navigation instruments in the navigation instrument area for collision avoidance, executing step S4 if it conforms, and executing step S5 if it does not conform when no personnel use the navigation instruments in the navigation instrument area for collision avoidance;

[0051] comparing whether the telescope notification 333 conforms to the behavior criterion 341 that there are personnel using a telescope for lookout, executing step S4 if it conforms, and executing step S5 if it does not conform when no personnel use a telescope for lookout;

[0052] comparing whether the radio notification 334 conforms a situation where the personnel use the radio for communication, executing step S4 if it conforms, and executing step S5 if it does not conform when no personnel use the radio.

[0053] Step S4: obtaining the record information 342, by, the standard behavior determination module 30, transmitting the record information 342 to the management module 40, performing recording, and then executing step S1.

[0054] Step S5: obtaining the record information 342 and the warning information 343, by the standard behavior determination module 30, transmitting the record information 342 and the warning information 343 to the management module 40, performing recording and issuing a warning, and then executing step S1.

[0055] Therefore, when the ship enters the congested waters, the behavior criterion 341 are such that the standard behavior determination module 30 will continuously issue the captain notification 322. The captain notification 322 is for the comparison unit 34 to compare the time the captain stays in the working area; the number-of-people notification 331 is for the comparison unit 34 to compare whether there are at least three people in the working area within ten minutes; the navigation instrument notification 332 is for the comparison unit 34 to compare whether the personnel use the navigation instruments interactively in the navigation instrument area for collision avoidance; the telescope notification 333 is for the comparison unit 34 to compare whether the personnel use the telescope for lookout; the radio notification 334 is for the comparison unit 34 to compare whether the personnel use the radio for communication. The standard behavior

determination module 30 will continuously issue one or more notifications. The comparison unit 34 is used to compare them one by one and issue one or more pieces of the record information 342 or one or more pieces of the warning information 343 until the ship leaves the congested waters. Through the record information 342 and the warning information 343 sent back to the management module 40, not only can the onshore management terminal 41 view short videos, screenshots, or text files to clarify the situation after receiving the warning information 343, but also the on-board management terminal 42 can improve work efficiency and comply with regulations.

[0056] It should be noted that the determination of the congested waters is carried out by a congested water area determination module 80. The congested water area determination module 80 is informationally connected to the standard behavior determination module 30. The congested water area determination module 80 is an existing conventional technology, so it will not be elaborated here. The congested waters judged by the congested water area determination module 80 are the areas where accidents are most likely to occur. Usually, high-risk navigation areas can be regarded as congested waters. In this embodiment, the congested waters include major ports, the Tokyo - Osaka Bay, Shanghai - Ningbo, the four major commercial ports in Taiwan, the waters of Hong Kong, and the Malacca - Singapore Strait. Taking ports as an example, Hong Kong and Shekou ports are the congested waters in this embodiment. The range is approximately a circular area with a radius of about 30 nautical miles centered on the Guizhou Pilot Station and the Hong Kong Pilot Station respectively, and the sailing time is about 1 - 2 hours, which can be regarded as congested waters.

[0057] It can be seen that the present invention provides a navigation safety intelligent management system and a method thereof. When a ship enters the congested waters, the system is activated. The camera module 10 and the video recording module 20 obtain the person data 12 and the

behavior data 22, and then bring these data 12 and 22 into the standard behavior determination module 30. The person recognition unit 32 in the standard behavior determination module 30 issues the captain notification 322 according to the person data 12; and the behavior recognition unit 33 in the standard behavior determination module 30 issues the number-of-people notification 331, the navigation instrument notification 332, the telescope notification 333, and the radio notification 334 according to the behavior data 22. The first and second notifications are compared one by one with the behavior criterion 341 pre-stored in the comparison unit 34. The comparison unit 34 issues the record information 342 or the warning information 343 one by one, and transmits the record information 342 and the warning information 343 to the management module 40, so that the onshore management terminal 41 can quickly know whether the ships under its jurisdiction meet the regulations through short videos less than one minute long, screenshots, and text files in the record information 342 and the warning information 343, improves the overall inspection rate, and strengthens navigation safety, saving the time-consuming process of uploading and watching long videos. Through the record information 342 and the warning information 343, the on-board management terminal 42 can achieve the effect of real-time warning, so as to regulate the ships under its jurisdiction to comply with navigation safety and reduce the occurrence of maritime accidents.

[0058] 【Symbol Explanation】

10...camera module

11...camera

12...person data

20...video recording module

21...video recorder

22...behavior data

30...standard behavior determination module

31...artificial intelligence identification host

32...person recognition unit

321...database

322...captain notification

33...behavior recognition unit

331...number-of-people nonfiction

332...navigation instrument notification

333...telescope notification

334...radio notification

34...comparison unit

341...behavior criterion

342...record information

343...warning information

40...management module

41...onshore management terminal

42...on-board management terminal

80...congested water area determination module

S1-S5...steps

WHAT IS CLAIMED IS:

1. An navigation safety intelligent management system, comprising:

a video recording module including at least one video recorder, the video recorder being used to capture at least one behavior data in a cockpit;

a camera module including at least one camera, the camera being used to capture at least one person data in the cockpit;

a standard behavior determination module, including a person recognition unit, a behavior recognition unit and a comparison unit, wherein the standard behavior determination module is informationally connected to the video recording module and the camera module, the person recognition unit is used to receive the person data, the person recognition unit is used to obtain a first notification according to the person data, the behavior recognition unit is used to receive the behavior data, the behavior recognition unit is used to obtain a second notification according to the behavior data, the comparison unit is used to receive the first notification and the second notification, at least one behavior criterion is pre-stored in the comparison unit and is used to compare the first notification and the second notification to obtain at least one record information and at least one warning information;

a management module being informationally connected to the standard behavior determination module and including a shore management terminal and an on-board management terminal, wherein the shore management terminal and the shipboard management terminal are informationally connected to the comparison unit to receive the record information and the warning information, and the record information and the warning information include short videos less than one minute long, screenshots and text files; and the behavior criterion include: a time criterion, a human figure criterion, a body-parts-of-personnel criterion, a personnel criterion, a motion criterion and an area criterion; and

a congested water area determination module configured to determine whether a ship is in a congested water area, the congested water area

determination module being informationally connected to the standard behavior determination module.

2. The navigation safety intelligent management system as claimed in Claim 1, wherein the standard behavior determination module includes at least one artificial intelligence recognition host.

3. The navigation safety intelligent management system as claimed in Claim 1, wherein the person recognition unit includes a database, and the database has a plurality of personnel files, and the personnel files include personnel photos, names and job titles.

4. The navigation safety intelligent management system as claimed in Claim 1, wherein the first notification includes: recognizing captain, and issuing a captain notification corresponding to face recognition of the captain.

5. The navigation safety intelligent management system as claimed in Claim 1, wherein the second notification includes: recognizing at least three people, and issuing a number-of-people notification corresponding to recognition of number of people.

6. The navigation safety intelligent management system as claimed in Claim 1, wherein the second notification includes: recognizing the use of each navigation instrument, and issuing a navigation instrument notification corresponding to movements of personnel in a navigation instrument area.

7. The navigation safety intelligent management system as claimed in Claim 1, wherein the second notification includes: using a telescope, and issuing a telescope notification corresponding to movements of personnel using the telescope.

8. The navigation safety intelligent management system as claimed in Claim 1, wherein the second notification includes: using radio equipment, and issuing a radio notification corresponding to movements of personnel using the radio equipment.

9. A method of using the navigation safety intelligent management system as claimed in Claim 1, comprising:

Step S1, detecting water area;

Step S2, determining whether it is a congested water area, executing step S3 if it is a congested water area; and executing step S1 if it is not a congested water area;

Step S3, collecting the person data and the behavior data, and bringing the person data and the behavior data into the standard behavior determination module to obtain the first notification and the second notification; comparing the first notification, the second notification with the behavior criterion, executing step S4 if the first notification and the second notification conform to the behavior criterion; and executing step S5 if the first notification and the second notification do not conform to the behavior criterion;

Step S4, obtaining the record information, transmitting the record information to the management module, and executing step S1; and

Step S5, obtaining the record information and the warning information, transmitting the record information and the warning information to the management module, and executing step S1.