METHOD OF IDENTIFYING REGULATION VIOLATION BEHAVIOR AND INTELLIGENT SENSOR SYSTEM OF PREVENTING REGULATION VIOLATION

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application is based on and claims the priority to the Chinese patent application No. 202111213708.1 filed on October 19, 2021, the disclosure of which is incorporated by reference herein in its entirety.

TECHNICAL FIELD

[0002] The present disclosure pertains to the technical field of safety identification, and specifically relates to a method of identifying regulation violation behavior and an intelligent sensor system of preventing regulation violation.

BACKGROUND

Since the rise of Industrial Revolution, regulation violation behaviors and operations in industrial production are very common at home and abroad, which are mainly prevented all round the world by means of propaganda, training, education, management, laws and the like (i.e., so-called “huge-crowd strategy”), and although great achievements have been made, the

WHAT IS CLAIMED IS:

1. A method of preventing regulation violation behavior, comprising:

obtaining dangerous source state information and behavior information of an operator;

determining whether the operator has a regulation violation behavior according to the dangerous source state information and the behavior information of the operator; and

in a case where the operator has the regulation violation behavior, commanding an actuator system to execute a first action for preventing the regulation violation behavior.

2. The method of preventing regulation violation behavior according to claim 1,

wherein in a case where the regulation violation behavior comprises the regulation violation behavior of uncapping operation in the explosive environment, the obtaining dangerous source state information and behavior information of an operator comprises at least one of:

obtaining dangerous source state information of whether a target device is live and behavior information of whether the operator performs uncapping on the target device; or

obtaining dangerous source state information of whether

hazardous gas in an operation environment exceeds a limit threshold and behavior information of whether the operator performs uncapping on the target device;

and/or

the determining whether the operator has a regulation violation behavior according to the dangerous source state information and the behavior information of the operator comprises: in a case where the dangerous source state information indicates that the target device is live or the hazardous gas in the operation environment exceeds the limit threshold, and the behavior information indicates that the operator performs uncapping on the target device, determining that the operator has the regulation violation behavior of the uncapping operation in the explosive environment; otherwise, determining that the operator does not have the regulation violation behavior of the uncapping operation in the explosive environment;

and/or

the method further comprising: obtaining identity information of the operator; in a case where the operator has the regulation violation behavior, determining an identity of a violator according to the identity information of the operator; and in a case where the operator does not have the regulation violation behavior and identity authentication performed according to the identity information of the operator is passed, commanding the

actuator system to execute a second action for allowing the operation behavior.

3. A system of preventing regulation violation behavior, comprising:

an acquisition device configured to acquire dangerous source state information and behavior information of an operator; and

a cloud computing center configured to:

receive the dangerous source state information and the behavior information of the operator sent from the acquisition device;

determine whether the operator has a regulation violation behavior according to the dangerous source state information and the behavior information of the operator; and

in a case where the operator has the regulation violation behavior, command an actuator system to execute a first action for preventing the regulation violation behavior.

4. The system of preventing regulation violation behavior according to 3, wherein the regulation violation behavior comprises at least one of: a regulation violation behavior of uncapping operation in an explosive environment, drowsy driving, a regulation violation behavior of off-duty, a regulation violation behavior of hazardous gas leakage, or a regulation violation behavior of entry to a dangerous area.

5. The system of preventing regulation violation behavior according to 4, wherein in a case where the regulation violation behavior comprises the regulation violation behavior of uncapping operation in the explosive environment, the acquisition device comprises: at least one of a first dangerous source state information acquisition device or a second dangerous source state information acquisition device, and an behavior information acquisition device,

wherein: the first dangerous source state information acquisition device is configured to acquire dangerous source state information of whether a target device is live;

the second dangerous source state information acquisition device is configured to acquire dangerous source state information of whether hazardous gas in an operation environment exceeds a limit threshold; and

the behavior information acquisition device is configured to acquire behavior information of whether the operator performs uncapping on the target device.

6. The system of preventing regulation violation behavior according to 5, wherein the behavior information acquisition device comprises:

a sensor housing (303);

a lock cylinder (305), which is arranged in a hole provided on one sidewall of the sensor housing (303) and fixes the sensor housing (303) onto a housing cover plate (313) of a device;

a sensor circuit board (301), which is provided inside the sensor housing (303), in signal connection with a microswitch node or a Hall element active switch, and configured to, after detecting behavior information that the operator triggers the microswitch due to removing the lock cylinder and the sensor housing, send the behavior information to the cloud computing center;

and/or

the second dangerous source state information acquisition device comprises: a hazardous gas probe; and a leakage sensor for preventing regulation violation, which is configured to, in a case where the hazardous gas probe detects that concentration of the hazardous gas exceeds the limit threshold, send the dangerous source state information of the hazardous gas to the cloud computing center.

7. The system of preventing regulation violation behavior according to 6, wherein the behavior information acquisition device further comprises:

a lossless connection sleeve (307), which is fixedly arranged on a bolt head of a fastening bolt (311) of the housing cover plate (313) of the device through a jackscrew (309), and configured to

cooperate with the lock cylinder (305) to fix the sensor housing (303) onto the housing cover plate (313) of the device.

8. The system of preventing regulation violation behavior according to 5, wherein the behavior information acquisition device comprises:

a sensor housing (303), which is fixedly arranged on a device cover plate (525) and connected with a lock sleeve (527) to form an inner cavity of the sensor housing (303);

an electric lock (517), which is arranged on the lock sleeve (527) and configured to, after identity identification performed for the operator by the cloud computing center is passed, act according to an instruction issued by the cloud computing center, to enable a key (519) to operate a lock cylinder (521) for unlocking to remove the sensor housing (303); and

a sensor circuit board (301), which is arranged on the inner cavity of the sensor housing (303), and configured to, in a case where the sensor housing (303) is removed, send the behavior information to the cloud computing center.

9. The system of preventing regulation violation behavior according to 8, wherein:

the behavior information acquisition device further comprises an acousto-optic identification probe (509) and a card reader (510),

which are connected with the sensor circuit board (301); and

the sensor circuit board (301) is further configured to send, to the cloud computing center, voice or image information of the operator obtained through the acousto-optic identification probe (509) or personal code information of a radio frequency card or a magnetic card obtained through the card reader (510), wherein the voice or image information of the operator or the personal code information is used for performing identity identification on the operator;

or the behavior information acquisition device further comprises: a lossless connection cover (523), which is fastened onto a device cover plate (525) through a lossless connection nut (512) and a lossless connection bolt (513); and a lossless connection bolt sleeve (515), which is sleeved onto the lossless connection bolt (513),the lock sleeve (527) being arranged on the lossless connection bolt sleeve (515) and fixed on the lossless connection bolt sleeve (515) through a lossless connection lock cylinder (521).

10. An apparatus of preventing regulation violation behavior, comprising:

a memory; and

a processor coupled to the memory, the processor being

configured to perform, based on instructions stored in the memory, the method of preventing regulation violation behavior according to any of claims 1 to 2.

11. A computer-readable storage medium having thereon stored computer program instructions which, when executed by a processor, implement the method of preventing regulation violation behavior according to any of claims 1 to 2.

12. A method of identifying a regulation violation behavior, comprising:

converting dangerous source state information into a value of a variable X by a dangerous source identification system,

or converting behavior of an operator into a value of a variable B1 by a regulation violation behavior identification system of device-based lock mechanism,

or converting behavior of the operator into a value of a variable B2 by a regulation violation behavior identification system based on non-lock mechanism arranged in an operating place,

or converting identity information of the operator into a value of a variable C by an identity identification system,

or converting information of position of the operator and information of a surrounding environment of the operator into a

value of a variable D by a position and environment identification system,

or converting a state comprising voltage and current auxiliary variables into a value of a variable E by an auxiliary variable E identification system,

processing action state of an electric lock mechanism system by a microprocessor and storing a value of a logical variable H in a cloud computing center for preventing regulation violation, wherein at least one of values of the variables X, B1, B2, C, D, E, or H is formed by being processed by a microprocessor of an intelligent sensor system for preventing regulation violation and then transmitted to a 5G information converter and then transmitted to the cloud computing center for preventing regulation violation pre-installed with identification and processing software for preventing regulation violation behavior, or the values of the variables are directly called and shared by the cloud computing center for preventing regulation violation from other data system;

determining types of regulation violation behavior, by the cloud computing center for preventing regulation violation, through computing the variables X, B1, B2, C, D, E, and H according to an identification algorithm of preventing regulation violation behavior; and

transmitting the types back to the 5G information converter;

processing the types by the microprocessor for commanding an

actuator system to act, giving an alarm, cutting off a dangerous source or locking the dangerous source.

13. The method of identifying a regulation violation behavior according to claim 12, wherein the dangerous source identification system comprises a dangerous source identification and locking system for a power supply system, an identification system for identifying a drowsiness dangerous source upon a regulation violation behavior of drowsiness, an identification system for identifying a not-watching-computer dangerous source upon a regulation violation behavior of not-watching-computer, an identification system for identifying hazardous gas dangerous source, an identification system for hazardous gas methane dangerous source, an identification system for a regulation violation behavior of entering a dangerous area, an identification system for identifying unmanned-vehicle (905) dangerous source, and an identification system for identifying a regulation violation behavior of entering a rail transport lane where a pedestrian is not admitted;

the dangerous source identification and locking system for the power supply system comprises a feed sensor based on the power supply system, or a photoelectric voltage converter of a breaker, or a voltage sensor, or a voltage analog-to-digital converter circuit for a monitoring system, or a voltage dangerous source

identification system for a switch comprehensive protection means, wherein: the dangerous source identification and locking system converts dangerous voltage of supply power into safe voltage through a voltage conversion circuit; the safe voltage is transmitted to the microprocessor through a port of a dangerous source information acquisition system of the intelligent sensor system for preventing regulation violation, processed by the microprocessor, and then sent from the 5G information converter to the cloud computing center for preventing regulation violation, to form a voltage dangerous source logical variable X1; in a case where there is dangerous voltage, X1=1, otherwise X1=0;

the identification system for identifying a drowsiness dangerous source upon a regulation violation behavior of drowsiness comprises a conveyor magnetic starter (601), a drowsiness sensor (603) for preventing regulation violation behavior based on non-lock identification, and the cloud computing center (7) for preventing regulation violation, wherein: the drowsiness sensor (603) is arranged on the conveyor magnetic starter (601) controlling a conveyor; a switch state signal of the conveyor magnetic starter (601)is transmitted to the drowsiness sensor (603) through a connecting wire (602); drowsiness sensor (603) transmits the switch state signal for controlling startup or shutdown of the conveyor by the conveyor magnetic starter (601), which is acting as dangerous source state information of the system,

to the microprocessor (15) through a port of a dangerous source information acquisition system of the intelligent sensor system for preventing regulation violation; the switch state signal is processed by the microprocessor (15) and then transmitted from a 5G information converter (5) to the cloud computing center (7) for preventing regulation violation, to form a drowsiness dangerous source logical variable X2; in a case where the switch state signal is startup, X2=1; in a case where the switch state signal is shutdown, X2=0;

the identification system for identifying a not-watching-computer dangerous source upon a regulation violation behavior of not-watching-computer comprises a device startup/shutdown state data system monitored by a computer and the cloud computing center (7) for preventing regulation violation, wherein: the system is networked with the cloud computing center (7) for calling and sharing the startup/shutdown dangerous source state information; the startup/shutdown dangerous source state information is sent to the cloud computing center (7), and then converted into a logical variable X3; in a case where the dangerous source state information is startup, X3=1, otherwise X3=0;

the hazardous gas dangerous source identification system comprises a hazardous gas probe, and a manual valve leakage sensor (701)for preventing regulation violation based on non-lock identification connected therewith, wherein: in a case where a

concentration value measured by the hazardous gas probe exceeds a specified value, the concentration value is transmitted to the microprocessor (15) through a port of a dangerous source information acquisition system of the intelligent sensor system for preventing regulation violation, processed by the microprocessor (15), and then sent from the 5G information converter (5) to the cloud computing center (7)for preventing regulation violation, to form a hazardous gas dangerous source logical variable X4; in a case where the concentration value exceeds the specified value, X4=1, otherwise X4=0;

the identification system for identifying hazardous gas methane dangerous source comprises a mine methane monitoring system, wherein: the mine methane monitoring system is networked with the cloud computing center (7) for preventing regulation violation through a ground scheduling station; a measured methane dangerous source concentration value is directly sent to the ground scheduling station; the cloud computing center (7) for preventing regulation violation is networked with the ground scheduling station for calling and sharing the methane dangerous source concentration value; and the cloud computing center (7) for preventing regulation violation is configured to form a methane dangerous source logical variable X5 through comparison computation; in a case where the methane dangerous source

concentration value exceeds a limit: X5=1, otherwise X5=0;

the identification system for identifying a regulation violation behavior of entering a dangerous area comprises: a regulation violation red line (803) and an entry sensor (811) for preventing regulation violation based on non-lock identification, wherein: the entry sensor (811) with a human body sensing probe is arranged on the regulation violation red line (803); and the entry sensor (811) continuously sends dangerous source information of the dangerous area, which is acting as regulation violation red line marker information, to the cloud computing center (7) for preventing regulation violation, to form a logical variable X6; in a case where the regulation violation red line marker information is received, X6=1, otherwise X6=0;

the identification system for identifying unmanned vehicle dangerous source comprises a dangerous source speed probe and a crash sensor (900) for preventing regulation violation based on non-lock identification, wherein: the dangerous source speed probe and the crash sensor (900) are arranged on an unmanned vehicle (905), and the crash sensor (900) transmits dangerous source information of the unmanned vehicle (905) to the microprocessor (15) through a port of a dangerous source information acquisition system of the intelligent sensor system for preventing regulation violation; the dangerous source information is processed by the microprocessor (15), and then sent from the 5G information

converter (5) to the cloud computing center (7) for preventing regulation violation, to form a moving vehicle dangerous source logical variable X7; in a case where a speed reaches a threshold, the logical variable X7=1, otherwise, X7=0;

the identification system for identifying a regulation violation behavior of entering a rail transport lane where a pedestrian is not admitted comprises a vehicle power control switch (107) and a pedestrian sensor (105) for preventing regulation violation based on non-lock identification, wherein: the pedestrian sensor (105) is arranged and connected on the vehicle power control switch (107); the pedestrian sensor (105) is configured to transmit rail transport dangerous source information to the microprocessor (15) through a port of a dangerous source information acquisition system of the intelligent sensor system for preventing regulation violation; the rail transport dangerous source information is processed by the microprocessor (15) and sent from the 5G information converter (5) to the cloud computing center (7) for preventing regulation violation; and the cloud computing center (7) for preventing regulation violation takes an on/off state signal of the vehicle power control switch (107) as a dangerous source logical variable X8; in a case where the switch is on, it is indicated that the rail transport vehicle (103) is in danger of crash into a person during moving, X8=1, otherwise, X8=0.

14. The method of identifying a regulation violation behavior according to claim 12, wherein the regulation violation behavior identification system of device-based lock mechanism comprises a sensor circuit board (301), a sensor housing (303), a lock cylinder (305), a lossless connection sleeve (307), and a jackscrew (309), wherein: the lossless connection sleeve (307) is arranged on a bolt head of a fastening bolt (311) of a housing cover plate (313) of a device and then fixed onto a head of the fastening bolt (311) with the jackscrew (309); the sensor circuit board (301) is provided on one side inside the sensor housing (303); the sensor circuit board (301) is in signal connection with a microswitch node or a Hall element active switch; the other side inside the sensor housing (303) is arranged on the lossless connection sleeve (307); the lock cylinder (305) is arranged in a hole provided on one sidewall of the sensor housing (303), and fixes the sensor housing (303) onto the housing cover plate (313)of the device;

in a case where a full-time person removes the lock cylinder (305) by using a special key and then removes the sensor housing (303), the microswitch on the sensor circuit board (301) is triggered, action information of the switch is processed by the sensor circuit board (301), sent to a mining cloud computing center (201) for preventing regulation violation, processed and converted into an behavior logical variable B11, wherein: in a case where the sensor housing is removed, B11=1, otherwise B11=0;

or

the regulation violation behavior identification system of device-based lock mechanism comprises a sensor circuit board (301), a sensor housing (303), a lossless connection lock cylinder (521), a lossless connection nut (512), a lossless connection bolt (513), a lossless connection bolt sleeve (515), a lossless connection cover (523), and a lock sleeve (527), wherein: the lossless connection cover (523) is arranged on a device cover plate (525); the lossless connection nut (512) is fixed onto the lossless connection cover (523); the lossless connection bolt (513) is sleeved with the lossless connection bolt sleeve (515) and screwed into the lossless connection nut (512) to fasten the lossless connection cover (523) onto the device cover plate (525); the lock sleeve (527) is arranged onto the lossless connection bolt sleeve (515); the lock sleeve (527) is fixed onto the lossless connection bolt sleeve (515) by screwing a key into the lossless connection lock cylinder (521); the sensor housing (303) is connected with the lock sleeve (527) to form an inner cavity of the sensor housing (303); the sensor circuit board (301) is arranged on the inner cavity of the sensor housing (303); an electric lock (517) of an electromagnet or a stepping motor is arranged on the lock sleeve (527); an acousto-optic identification probe (509) and a card reader (510) are arranged on one side surface of the sensor housing (303); and the sensor circuit board (301) is connected with the

electric lock (517), the acousto-optic identification probe (509), and the card reader (510);

after the sensor circuit board (301) obtains voice or an image of an operator through the acousto-optic identification probe (509), or obtains personal code of a radio frequency card or a magnetic card through the card reader (510), the voice or image or personal code is transmitted to the microprocessor through a port of the regulation violation behavior identification system of device-based lock mechanism of the intelligent sensor system for preventing regulation violation, and sent from the 5G information converter to the mining cloud computing center (201)for preventing regulation violation; the mining cloud computing center (201) for preventing regulation violation enables the regulation violation behavior identification software for computation; and in a case where the operator is determined to be a full-time person, an instruction issued by the mining cloud computing center (201) is transmitted from the 5G information converter to the microprocessor (15) for processing, for commanding the electric lock (517) to act to open a passage, to enable the key (519) to operate the lock cylinder (521) for unlocking to remove the sensor housing (303); and in a case where the sensor housing (303) is removed, information is transmitted from the sensor circuit board (301) to the mining cloud computing center (201) for preventing regulation violation, and converted into an behavior logical

variable B12; in a case where the sensor housing is removed, B12=1, otherwise B12=0.

15. The method of identifying a regulation violation behavior according to claim 12, wherein the regulation violation behavior identification system based on non-lock mechanism comprises an identification system for identifying a regulation violation behavior of drowsiness, an identification system for identifying a regulation violation behavior of not-watching-computer, an identification system for identifying a regulation violation behavior of hazardous gas leakage, an identification system for identifying a regulation violation behavior of entering a dangerous area, an identification system for identifying a regulation violation behavior of an unmanned vehicle (905), and an identification system for identifying a regulation violation behavior of entering a rail transport lane where a pedestrian is not admitted;

the identification system for identifying a regulation violation behavior of drowsiness comprises a drowsiness sensor (603) for preventing regulation violation based on non-lock identification and an preventing drowsiness means (607), wherein: the drowsiness sensor (603) is arranged on a conveyor magnetic starter (601) controlling a conveyor; the conveyor magnetic starter (601) is connected with the drowsiness sensor (603) through

a connecting wire (602); the drowsiness sensor (603) is connected with the preventing drowsiness means (607) and wirelessly connected with the cloud computing center (7) for preventing regulation violation; and the cloud computing center (7) for preventing regulation violation is directly connected with a personnel positioning system (611) for data calling and sharing; in a case where the operator works normally, the preventing drowsiness means (607) is operated regularly; in a case where the operator is incapable of working normally due to regulation violation behavior of drowsiness, the operation of the preventing drowsiness means (607) is automatically stopped and drowsiness state information is sent to the drowsiness sensor (603), processed by the microprocessor (15) and sent from the 5G information converter (5) to the cloud computing center (7), to form a drowsiness logical variable B21; in a case where the operator is drowsy, B21=1, otherwise B21=0;

the identification system for identifying a regulation violation behavior of not-watching-computer comprises a not-watching-computer probe capable of regularly sending a sensing signal for preventing regulation violation, wherein: the not-watching-computer probe capable of regularly sending a sensing signal is arranged on a computer and connected with the intelligent sensor system for preventing regulation violation; in a case where an operator observes regulation to watch computer, the not-

watching-computer probe regularly sends a signal to the intelligent sensor system for preventing regulation violation; in a case where the operator violates regulation not to watch computer, the not-watching-the-computer probe sends another signal, which is processed by the microprocessor (15) and transmitted from the 5G information converter (5) to the cloud computing center for preventing regulation violation, to form a logical variable B22 after comparison computation; in a case where the operator does not watch computer, B22=1, otherwise B22=0;

the identification system for identifying a regulation violation behavior of hazardous gas leakage comprises a manual valve leakage sensor (701) for preventing regulation violation based on non-lock identification and an electric valve leakage sensor (709) for preventing regulation violation based on non-lock identification, wherein: the manual valve leakage sensor (701) and the electric valve leakage sensor (709) are arranged at two positions and are both connected to the cloud computing center (7) for preventing regulation violation through their 5G information converters (5) for wireless communication; and the manual valve leakage sensor (701) is connected to one hazardous gas probe and one human body sensing probe; in a case where time of hazardous gas leakage caused by regulation violation is more than a certain time, the human body sensing probe of the manual valve leakage sensor (701) transmits information of whether there is an operator

on site to the microprocessor (15); the information is processed and wirelessly reported to the cloud computing center (7) for preventing regulation violation for comparison computation, to form a logical variable B23; in a case where an operator is on site,B23=1, otherwise B23=0;

the identification system for identifying a regulation violation behavior of entering a dangerous area comprises a regulation violation red line (803) and an entry sensor (811) for preventing regulation violation based on non-lock identification, wherein: the entry sensor (811) is arranged on the regulation violation red line; in a case where the operator touches the regulation violation red line (803), the entry sensor (811) sends regulation violation behavior information of entering a dangerous area to the cloud computing center (7) for preventing regulation violation through a 5G information converter (5) corresponding to the sensor, to form a logical variable B24; in a case where the operator touches the regulation violation red line, B24=1, otherwise B24=0;

the identification system for identifying a regulation violation behavior of an unmanned vehicle comprises a human body sensing radar probe and a crash sensor (900) for preventing regulation violation based on non-lock identification, wherein: the human body sensing radar probe is arranged on the crash sensor (900); and the human body sensing radar probe and the crash sensor

(900) are arranged on an unmanned vehicle (905); the crash sensor (900) transmits, to the microprocessor, behavior information of a pedestrian (903) who violates regulation to enter a road that is detected by the human body sensing radar probe; the behavior information is sent from the 5G information converter to the cloud computing center (7) for preventing regulation violation, to form a regulation violation logical variable B25; in a case where a distance between the pedestrian (903) who violates regulation to enter a road and the unmanned vehicle (905) approaches a specified value,B25=1, otherwise B25=0; and

the identification system for identifying a regulation violation behavior of entering a rail transport lane where a pedestrian is not admitted comprises a vehicle power control switch (107), a pedestrian sensor (105) for preventing regulation violation based on non-lock identification, and a laser (109), wherein: the pedestrian sensor (105) is arranged on the vehicle power control switch (107) and connected with the laser (109); laser emitted by the laser (109) is a regulation violation red line; in a case where a person (100) who violates regulation to enter a rail transport lane performs regulation violation behavior of shielding the laser, the pedestrian sensor (105) transmits regulation violation behavior information of the person to the microprocessor; the regulation violation behavior information is sent from the 5G information converter to the cloud computing

center (7) for preventing regulation violation, to form a rail pedestrian regulation violation logical variable B26; in a case where the regulation violation red line is touched, B26=1, otherwise B26=0.

16. The method of identifying a regulation violation behavior according to claim 12, wherein the identity identification system (11) comprises an acoustic-optical identification probe (509), a card reader (510), and information of voice, an image, or a radio frequency card number profile identity of a full-time person that is pre-installed in the cloud computing center for preventing regulation violation, wherein: the acoustic-optical identification probe (509) and the card reader (510) are connected with the sensor circuit board; the acoustic-optical identification probe (509) and the card reader (510) transmit acquired actual identity information of the operator to the microprocessor (15); the acquired actual identity information being processed, and then sent from the 5G information converter (5) to the cloud computing center (7) for preventing regulation violation, and then compared with the profile information of the full-time person that is pre-installed in the cloud computing center (7) for preventing regulation violation to identify an operator identity, to form a logical variable C; in a case where the operator is full-time person, C=1, otherwise C=0; an identification result C=1 or C=0 is

transmitted from the 5G information converter (5) to the microprocessor (15) to command the electric lock of the electric lock mechanism system (9) to act.

17. The method of identifying a regulation violation behavior according to claim 12, wherein the position and environment identification system comprises a database of the cloud computing center (7)for preventing regulation violation where information of device performance and sensor position profile information are stored, and an environmental temperature and photosensitive probe device arranged and connected on the intelligent sensor system for preventing regulation violation, wherein: the position and environment identification system regularly acquires related parameter information of a sensor position and a device surrounding temperature and transmits the information to the microprocessor (15); the information is sent from the 5G information converter to the cloud computing center (7) for preventing regulation violation, to form a position and environment identification logical variable D; and after the cloud computing center (7) for preventing regulation violation performs analysis and computation, a result of the analysis and computation is sent to a computer or a mobile phone terminal (6); in a case where the related parameter information is not zero: D=1, otherwise D=0; and

the auxiliary variable E identification system (13) comprises

a switch comprehensive protection means and a radio frequency card reader, wherein: the auxiliary variable E identification system regularly acquires related parameter information of device voltage, device current, device short-circuit protection setting value, device leakage protection action, device power factor, and personnel patrol inspection and transmits the information to the microprocessor (15); the information is processed and then transmitted from the 5G information converter to the cloud computing center (7) for preventing regulation violation, to form an auxiliary variable logical variable E; and after analysis and computation by the cloud computing center (7) for preventing regulation violation, a result of the analysis and computation is transmitted to a computer or a mobile phone terminal (6); in a case where the related parameter information of the auxiliary variable logical variable E is not zero, E=1, otherwise E=0.

18. The method of identifying a regulation violation behavior according to claim 12, wherein the actuator system is any of the electric lock mechanism system (9), a superior power switch sensor (215) for preventing regulation violation, a pipeline electric valve (707), a possible rear-ending vehicle (907), a vehicle power control switch (107), or a mobile phone of an emergency rescuer (807);

the electric lock mechanism system (9) comprise an electro-

magnet electric lock or stepping motor electric lock, wherein the electro-magnet electric lock or stepping motor electric lock (517) is arranged on a lock sleeve (527); an electric lock action state signal is sent to the cloud computing center (7) for preventing regulation violation through the microprocessor (15) and the 5G information converter (5) in succession, to form a logical variable H; in a case where the electric lock is opened, H=1; and in a case where the electric lock is closed, H=0; the cloud computing center (7) for preventing regulation violation performs identification computation after receiving a signal sent from the identity identification system (11); in a case where the person is considered a full-time person, H=1 is set and the electric lock is commanded to be opened, otherwise, H=0 is set and the electric lock is commanded to be closed;

the superior power switch sensor (215) for preventing regulation violation is arranged on a load switch (209), wherein a load switch sensor (205) for preventing regulation violation issues a power cut or locking request to an superior power switch (213) controlling a dangerous source facility; the request is computed and processed by a mining cloud computing center (201) for preventing regulation violation, for commanding the superior power switch sensor (215) to issue a power cut instruction, to command the superior power switch (213) to be powered off or locked;

while the superior power switch (213) transmits power to the load switch (209), live information is transmitted from the superior power switch sensor (215) to the mining cloud computing center (201) for preventing regulation violation and converted into a voltage dangerous source logical variable X1; in a case where there is live, X1=1, otherwise X1=0; in a case where X1=1, the mining cloud computing center (201) for preventing regulation violation synchronously commands an electric lock of the load switch sensor (205) for preventing regulation violation to be locked, to disable the operator to perform a regulation violation behavior of uncapping operation, for identifying and locking a live dangerous source; in a case where X1=0, the mining cloud computing center (201) for preventing regulation violation synchronously commands the electric lock of the load switch sensor (205) to be unlocked, to enable the operator to perform an uncapping operation; and

the pipeline electric valve (707), the possible rear-ending vehicle (907), the vehicle power control switch (107), or the mobile phone of the emergency rescuer (807) is a facility for controlling the dangerous source; after the cloud computing center (7) for preventing regulation violation determines a regulation violation and sends an instruction to the facility for controlling the dangerous source, the facility for controlling the dangerous source is commanded to act, to cut off and lock the dangerous

source, and meanwhile, give an alarm.

19. The method of identifying a regulation violation behavior according to claim 12, wherein the regulation violation identification algorithm comprises at least one of:

W11=X1*(B1+B2)*C=1;

W12=X2*(B1+B2)*C=1;

W1n=Xn*(B1+B2)*C=1;

W21=X1*(B1+B2)=1;

W22=X2*(B1+B2)=1;

W2n=Xn*(B1+B2)=1;

W3=f(X,B1,B2,C,D,E,H)=1; or

FW=(B1+B2)*FX*FC=1;

where X1, X2 and Xn represent first, second and nth dangerous source logical variables, W with a serial number represents various regulation violation behavior logical variables, FW represents a non-regulation violation behavior logical variable, FX represents a non-dangerous source logical variable, and FC represents a non-full-time person logical variable;

and/or

the cloud computing center for preventing regulation violation is further capable of being networked with BeiDou Navigation System, GPS Navigation System, an underground personnel positioning system, or a methane monitoring system, for data calling and sharing.

20. An intelligent sensor system of preventing regulation violation for performing the method according to claim 12, comprising a regulation violation behavior identification system (1) based on lock mechanism, a regulation violation behavior identification system (3) based on non-lock mechanism, a 5G information converter (5), a computer or a mobile phone terminal (6) installed with regulation violation behavior identification and processing software, a cloud computing center (7) for preventing regulation violation installed with the regulation violation behavior identification and processing software, an electric lock mechanism system (9), an identity identification system (11), an auxiliary variable E identification system (13), a microprocessor (15), a position and environment identification system (17), and a dangerous source information acquisition system (19), wherein: an information input end of the microprocessor (15) is connected with the regulation violation behavior identification system (1)based on lock mechanism, the regulation violation behavior identification system (3) based on non-lock mechanism, the dangerous source information acquisition system (19), the identity identification system (11), the position and environment identification system (17), and the auxiliary variable E identification system (13); a control signal output end of the microprocessor (15) is connected with signal input ends of the

electric lock mechanism system (9) and the 5G information converter (5); a signal output end of the 5G information converter (5) is wirelessly connected with the cloud computing center (7) for preventing regulation violation; and the cloud computing center (7) for preventing regulation violation is connected with the computer or the mobile phone terminal (6); and

a basic workflow of the intelligent sensor system for preventing regulation violation comprises: starting; initializing; reading EEPROM configuration information; configuring the 5G information converter (5); connecting a 5G network; receiving a command from the cloud computing center (7)for preventing regulation violation and parsing the command; regularly reporting information of the dangerous source information acquisition system (19), information of the position and environment identification system (17), and information of the auxiliary variable E identification system (13); and circularly detecting information of the regulation violation behavior identification system (1) based on lock mechanism, information of the regulation violation behavior identification system (3) based on non-lock mechanism, information of the identity identification system (11), and electric lock action information of the electric lock mechanism system (9).