Claims

1. A self-learning lighting group control method applied to a self-learning lighting group control system, wherein the method comprises:

collecting, by a triggered intelligent lighting node, trigger data when a moving body passes in a lighting area, and saving and transmitting the trigger data to a neighborhood intelligent lighting node;

receiving and forwarding, by the neighborhood intelligent lighting node, the trigger data;

generating, by the neighborhood intelligent lighting node, a response message according to the trigger data to transmit the response message to the triggered intelligent lighting node;

updating, by the triggered intelligent lighting node, a first neighborhood node list, a second neighborhood node list and a neighborhood primary channel node list stored therein according to the response message, wherein the first neighborhood node list is a set of adjacent intelligent lighting nodes of which the number of communication hops with the triggered intelligent lighting node is not greater than an upper limit value of the number of communication hops of the first neighborhood; the second neighborhood node list is a set of adjacent intelligent lighting nodes of which the number of communication hops with the triggered intelligent lighting node is greater than an upper limit value of the number of the communication hops of the first neighborhood and not greater than an upper limit value of the number of the communication hops of the second neighborhood; and the neighborhood primary channel node list is an intersection of the nodes with more accumulated trigger times and the neighborhood intelligent lighting nodes;

performing, by the triggered intelligent lighting node, self-learning according to the first neighborhood node list, the second neighborhood node list and the neighborhood primary channel node list stored therein and the trigger data to generate a lighting group control scheme; and

if the triggered intelligent lighting node completing self-learning senses the moving body again, reading the lighting group control scheme stored therein to generate a corresponding lighting control message, and transmitting the lighting control message to the neighborhood intelligent lighting node, so that the neighborhood intelligent lighting node executes a group control action corresponding to the lighting control message;

wherein, the self-learning lighting group control system comprises a plurality of intelligent lighting nodes, and each of the intelligent lighting nodes comprises: a sensing module, a storage module, a calculation module, a communication module, a control module and a lighting module; wherein

the sensing module is configured to collect trigger data when a moving body passes through a lighting area;

the storage module is coupled to the sensing module, and the storage module is configured to receive and store the trigger data;

the communication module is configured to receive a communication instruction generated by the calculation module, and perform communication and data exchange with the other intelligent lighting nodes according to the communication instruction to obtain communication data;

the calculation module is coupled to the storage module and the communication module, and the calculation module is configured to adaptively generate a lighting group control scheme according to the trigger data and the communication data, and control the intelligent lighting nodes on the adjacent and pre-determined traveling routes according to the lighting group control scheme, so that the control module in the intelligent lighting nodes on the adjacent and pre-determined traveling routes controls the lighting modules thereof to operate; and

the control module is coupled to the calculation module and the lighting module, and the control module is configured to receive a lighting control instruction generated by the calculation module and control the lighting module to operate according to the lighting control instruction.

2. The self-learning lighting group control method according to claim 1, wherein the neighborhood intelligent lighting node comprises a first neighborhood intelligent lighting node and a second neighborhood intelligent lighting node, and the neighborhood intelligent lighting node receives and forwards the trigger data, comprising:

receiving, by the first neighborhood intelligent lighting node, the trigger data and checking whether a triggered intelligent lighting node id is recorded in the first neighborhood node list stored therein according to the trigger data;

if the triggered intelligent lighting node id does not exist in the first neighborhood node list, recording the triggered intelligent lighting node id to the first neighborhood node list thereof;

checking, by the first neighborhood intelligent lighting node, the number of trigger data jumping to determine whether the number of jumping is smaller than an upper limit value of the number of the communication hops of the first neighborhood;

if the number of jumping is smaller than the upper limit value of the number of the communication hops of the first neighborhood, taking the first neighborhood intelligent lighting node as the relay node to forward the trigger data to the next first neighborhood intelligent lighting node;

returning the next first neighborhood intelligent lighting node to execute the step of receiving, by the first neighborhood intelligent lighting node, the trigger data and checking whether a triggered intelligent lighting node id is recorded in the first neighborhood node list stored therein according to the trigger data, until the number of jumping is not smaller than the upper limit value of the number of the communication hops of the first neighborhood; and

if the number of jumping is not smaller than the upper limit value of the number of the communication hops of the first neighborhood, taking the first neighborhood intelligent lighting node as the relay node to forward the trigger data to the second neighborhood intelligent lighting

node.

3. The self-learning lighting group control method according to claim 2, wherein the neighborhood intelligent lighting node receives and forwards the trigger data, further comprising:

receiving, by the second neighborhood intelligent lighting node, the trigger data forwarded by the relay node and checking whether a first neighborhood node list stored therein records the relay node id;

if the relay node id does not exist in the first neighborhood node list of the second neighborhood intelligent lighting node, recording the relay node id to the first neighborhood node list thereof;

checking, by the second neighborhood intelligent lighting node, whether a triggered node list stored therein records the triggered intelligent lighting node id;

if the triggered intelligent lighting node id does not exist in the triggered node list, recording the triggered intelligent lighting node id to the triggered node list;

checking, by the second neighborhood intelligent lighting node, the number of trigger data jumping to determine whether the number of jumping is smaller than an upper limit value of the number of the communication hops of the second neighborhood;

if the number of jumping is smaller than the upper limit value of the number of the communication hops of the second neighborhood, taking the second neighborhood intelligent lighting node as a next-level relay node to forward the trigger data to the next second neighborhood intelligent lighting node; and

returning the next second neighborhood intelligent lighting node to execute the step of receiving, by the second neighborhood intelligent lighting node, the trigger data forwarded by the relay node and checking whether a first neighborhood node list stored therein records the relay node id, until the number of jumping is not smaller than the upper limit value of the number of the communication hops of the second neighborhood.

4. The self-learning lighting group control method according to claim 3, wherein the response message comprises a first response message and a second response message, and the neighborhood intelligent lighting node generates a response message according to the trigger data to be transmitted to the triggered intelligent lighting node, comprising:

after receiving the trigger data, generating, by the first neighborhood intelligent lighting node, the first response message and transmitting the first response message to the triggered intelligent lighting node;

after receiving the trigger data, generating, by the second neighborhood intelligent lighting node, the second response message and transmitting the second response message to the first neighborhood intelligent lighting node;

after receiving the second response message, checking, by the first neighborhood intelligent lighting

node, whether a first neighborhood node list stored therein records a second neighborhood intelligent lighting node id;

if the second neighborhood intelligent lighting node id does not exist in the first neighborhood node list of the first neighborhood intelligent lighting node, recording, by the first neighborhood intelligent lighting node, the second neighborhood intelligent lighting node id to the first neighborhood node list; and

after receiving the second response message, forwarding, by the first neighborhood intelligent lighting node, the second response message to the triggered intelligent lighting node.

5. The self-learning lighting group control method according to claim 4, wherein the updating, by the triggered intelligent lighting node, a first neighborhood node list, a second neighborhood node list and a neighborhood primary channel node list stored therein according to the response message comprises:

after receiving the first response message, checking, by the triggered intelligent lighting node, whether the first neighborhood node list stored therein records a first neighborhood intelligent lighting node id;

if the first neighborhood intelligent lighting node id does not exist in the first neighborhood node list, recording the first neighborhood intelligent lighting node id to the first neighborhood node list;

after receiving the second response message, checking, by the triggered intelligent lighting node, whether the second neighborhood node list stored therein records the second neighborhood intelligent lighting node id;

if the second neighborhood intelligent lighting node id does not exist in the second neighborhood node list, recording the second neighborhood intelligent lighting node id to the second neighborhood node list; and

determining, by the triggered intelligent lighting node, whether the triggered intelligent lighting node itself is a primary channel node by comparing accumulated triggering times of the triggered intelligent lighting node itself and the neighborhood intelligent lighting node, and recording or updating a determined result in a neighborhood primary channel node list of the first neighborhood node and the second neighborhood node of the triggered intelligent lighting node.

6. The self-learning lighting group control method according to claim 5, wherein the performing, by the triggered intelligent lighting node, self-learning according to the first neighborhood node list, the second neighborhood node list and the neighborhood primary channel node list stored therein and the trigger data to generate a lighting group control scheme comprises:

extracting, by the triggered intelligent lighting node, the first neighborhood intelligent lighting node id from the first neighborhood node list stored therein, and generating a lighting group control scheme of the first neighborhood intelligent lighting node according to the first neighborhood

intelligent lighting node id and the trigger data; and

reading, by the triggered intelligent lighting node, the second neighborhood node list and the neighborhood primary channel node list stored therein, and calculating an intersection between the second neighborhood node list and the neighborhood primary channel node list to obtain a lighting group control scheme with a farther range on a pre-determined traveling route of the triggered intelligent lighting node.

7. The self-learning lighting group control method according to claim 3, wherein the transmitting the lighting control message to the neighborhood intelligent lighting node, so that the neighborhood intelligent lighting node executes a group control action corresponding to the lighting control message comprises:

transmitting the lighting control message to the first neighborhood intelligent lighting node and the second neighborhood intelligent lighting node to control the first neighborhood intelligent lighting node and the second neighborhood intelligent lighting node to light on and/or light off.

8. The self-learning lighting group control method according to claim 1, wherein the intelligent lighting nodes on the adjacent and pre-determined traveling routes of the triggered intelligent lighting nodes controlled by the lighting group control scheme comprise a first neighborhood intelligent lighting node and a second neighborhood intelligent lighting node, wherein the number of communication hops between the first neighborhood intelligent lighting node and the triggered intelligent lighting node is not greater than an upper limit value of the number of communication hops of the first neighborhood intelligent lighting node; the number of communication hops between the second neighborhood intelligent lighting node and the triggered intelligent lighting node is greater than an upper limit value of the number of the communication hops of the first neighborhood , and is not greater than an upper limit value of the number of the communication hops of the second neighborhood .

9. The self-learning lighting group control method according to claim 8, wherein the neighborhood of each of the triggered intelligent lighting nodes comprises at least one of the first neighborhood intelligent lighting nodes, and the distance between the triggered intelligent lighting node and the first neighborhood intelligent lighting node does not exceed the maximum distance of a wireless communication single hop.