

WHAT IS CLAIMED IS:

1. A method of classifying license plates based on deep learning, the method being applied to an electronic device and comprising:

acquiring at least one photograph sent by a terminal device, the acquired photograph having license plate information of a corresponding vehicle;

preprocessing the acquired photograph such that the preprocessed photograph matches input parameters of a pretrained recognition model; and

inputting the preprocessed photograph to the pretrained recognition model to recognize vehicle use information corresponding to the preprocessed photograph based on the corresponding license plate information, and sending the vehicle use information to the terminal device, wherein the terminal device displays a vehicle-use-recognition operation interface including a single-photograph recognition control and a multi-photograph recognition control;

if the acquired photograph is a single photograph of a vehicle, receiving a first instruction for recognizing vehicle use information of the single photograph having license plate information of the vehicle sent by the terminal device, and sending the vehicle use information of the single photograph to the terminal device, wherein the first instruction is issued through the single-photograph recognition control to the electronic device; or

if the acquired photograph comprises multiple photographs of a plurality of vehicles, receiving a second instruction for recognizing vehicle use information the multiple photographs having license plate information of the plurality of vehicles sent by the terminal device, and sending a title of each of the multiple photographs as well as the corresponding vehicle use information of each of the multiple photographs to

the terminal device, wherein the second instruction is issued through the multi-photograph recognition control to the electronic device.

2. The method of claim 1, wherein preprocessing the acquired photograph such that the preprocessed photograph matches the input parameters of the pretrained recognition model comprises:

whitening the acquired photograph to filter out noise pixels in the acquired photograph, wherein the whitened photograph has a pixel mean of 0 and a pixel variance of 1; and

adjusting a size of the whitened paragraph according to input dimensions of the pretrained recognition model.

3. The method of claim 1, wherein the pretrained recognition model is a trained deep convolutional neural network (CNN) model, and the deep CNN model is trained by the following processes:

acquiring a plurality of preset photograph samples having license plate information of a plurality of preset vehicles;

classifying the acquired photograph samples according to vehicle use information thereof, so as to obtain at least one photograph category;

whitening each photograph sample in each photograph category, adjusting a size of the whitened photograph sample, and rotating the adjusted photograph sample to obtain photograph sample sets under the photograph category;

acquiring a plurality of photograph sample sets to be trained under a photograph category and a plurality of photograph sample sets to be tested under the photograph category from the photograph sample sets under the photograph category; and

inputting the photograph samples of the photograph sample sets to be trained sequentially into the deep CNN model, using a preset training algorithm to train the deep CNN model used for recognizing vehicle use information based on license plate information, and testing the trained deep CNN model using the photograph samples of the photograph sample sets to be tested under each photograph category.

4. The method of claim 1, further comprising:

when the acquired photograph includes a plurality of photographs, classifying the acquired photograph according to vehicle use information thereof, so that the acquired photographs with the same vehicle use information are classified into a same photograph category, and the acquired photographs with different vehicle use information are classified into different photograph categories.

5. A system for classifying license plates based on deep learning, the system operating in an electronic device and comprising:

an acquisition module configured to acquire at least one photograph sent by a terminal device, the acquired photograph having license plate information of a corresponding vehicle;

a preprocessing module configured to preprocess the acquired photograph such that the preprocessed photograph matches input parameters of a pretrained recognition model; and

a recognition module configured to input the preprocessed photograph to the pretrained recognition model to recognize vehicle use information corresponding to the preprocessed photograph based on the corresponding license plate information, and sending the vehicle use information to the terminal device, wherein the terminal

device displays a vehicle-use-recognition operation interface including a single-photograph recognition control and a multi-photograph recognition control;

if the acquired photograph is a single photograph of a vehicle, receiving a first instruction for recognizing vehicle use information of the single photograph having license plate information of the vehicle sent by the terminal device, and sending the vehicle use information of the single photograph to the terminal device, wherein the first instruction is issued through the single-photograph recognition control to the electronic device; or

if the acquired photograph comprises multiple photographs of a plurality of vehicles, receiving a second instruction for recognizing vehicle use information the multiple photographs having license plate information of the plurality of vehicles sent by the terminal device, and sending a title of each of the multiple photographs as well as the corresponding vehicle use information of each of the multiple photographs to the terminal device, wherein the second instruction is issued through the multi-photograph recognition control to the electronic device.

6. The system of claim 5, wherein preprocessing the acquired photograph such that the preprocessed photograph matches the input parameters of the pretrained recognition model comprises:

whitening the acquired photograph to filter out noise pixels in the acquired photograph, wherein the whitened photograph has a pixel mean of 0 and a pixel variance of 1; and

adjusting a size of the whitened paragraph according to input dimensions of the pretrained recognition model.

7. The system of claim 5, wherein the pretrained recognition model is a trained deep convolutional neural network (CNN) model, and the deep CNN model is trained by the following processes:

acquiring a plurality of preset photograph samples having license plate information of a plurality of preset vehicles;

classifying the acquired photograph samples according to vehicle use information thereof, so as to obtain at least one photograph category;

whitening each photograph sample in each photograph category, adjusting a size of the whitened photograph sample, and rotating the adjusted photograph sample to obtain photograph sample sets under the photograph category;

acquiring a plurality of photograph sample sets to be trained under a photograph category and a plurality of photograph sample sets to be tested under the photograph category from the photograph sample sets under the photograph category; and

inputting the photograph samples of the photograph sample sets to be trained sequentially into the deep CNN model, using a preset training algorithm to train the deep CNN model used for recognizing the vehicle use information based on the license plate information, and testing the trained deep CNN model using the photograph samples of the photograph sample sets to be tested under each photograph category.

8. The system of claim 5, further comprising:

a classification module configured to classify the acquired photograph by vehicle use information thereof when the acquired photograph includes a plurality of photographs, so that the acquired photographs with the same vehicle use information

are classified into a same photograph category, and the acquired photographs with different vehicle use information are classified into different photograph categories.

9. An electronic device comprising a processing device, a storage device, and a system for classifying license plates based on deep learning that is stored in the storage device and comprises at least one computer-readable instruction, the computer-readable instruction being executable by the processing device to perform the following operations:

acquiring at least one photograph sent by a terminal device, the acquired photograph having license plate information of a corresponding vehicle;

preprocessing the acquired photograph such that the preprocessed photograph matches input parameters of a pretrained recognition model; and

inputting the preprocessed photograph to the pretrained recognition model to recognize vehicle use information corresponding to the preprocessed photograph based on the corresponding license plate information, and sending the vehicle use information to the terminal device, wherein the terminal device displays a vehicle-use-recognition operation interface including a single-photograph recognition control and a multi-photograph recognition control;

if the acquired photograph is a single photograph of a vehicle, receiving a first instruction for recognizing vehicle use information of the single photograph having license plate information of the vehicle sent by the terminal device, and sending the vehicle use information of the single photograph to the terminal device, wherein the first instruction is issued through the single-photograph recognition control to the electronic device; or

if the acquired photograph comprises multiple photographs of a plurality of vehicles, receiving a second instruction for recognizing vehicle use information the multiple photographs having license plate information of the plurality of vehicles sent by the terminal device, and sending a title of each of the multiple photographs as well as the corresponding vehicle use information of each of the multiple photographs to the terminal device, wherein the second instruction is issued through the multi-photograph recognition control to the electronic device.

10. The electronic device of claim 9, wherein preprocessing the acquired photograph such that the preprocessed photograph matches the input parameters of the pretrained recognition model comprises:

whitening the acquired photograph to filter out noise pixels in the acquired photograph, wherein the whitened photograph has a pixel mean of 0 and a pixel variance of 1; and

adjusting a size of the whitened paragraph according to input dimensions of the pretrained recognition model.

11. The electronic device of claim 9, wherein the pretrained recognition model is a trained deep convolutional neural network (CNN) model, and the deep CNN model is trained by the following processes:

acquiring a plurality of preset photograph samples which have license plate information of a plurality of preset vehicles;

classifying the acquired photograph samples according to vehicle use information thereof, so as to obtain at least one photograph category;

whitening each photograph sample in each photograph category, adjusting a size of the whitened photograph sample, and rotating the adjusted photograph sample to obtain photograph sample sets under the photograph category;

acquiring a plurality of photograph sample sets to be trained under the photograph category and a plurality of photograph sample sets to be tested under the photograph category from the photograph sample sets under the photograph category; and

inputting the photograph samples of the photograph sample sets to be trained sequentially into the deep CNN model, using a preset training algorithm to train the deep CNN model used for recognizing vehicle use information based on license plate information, and testing the trained deep CNN model using the photograph samples of the photograph sample sets to be tested under each photograph category.

12. The electronic device of claim 9, wherein the at least one computer-readable instruction is executable by the processing device to further perform the following operations:

when the acquired photograph includes a plurality of photographs, classifying the acquired photograph by vehicle use information thereof, so that the acquired photographs with the same vehicle use are classified into a same photograph category, and the acquired photographs with different vehicle use information are classified into different photograph categories.

13. A computer-readable storage medium having stored thereon at least one computer-readable instruction executable by a processing device to perform the following operations:

acquiring at least one photograph sent by a terminal device, the acquired photograph having license plate information of a corresponding vehicle;

preprocessing the acquired photograph such that the preprocessed photograph matches input parameters of a pretrained recognition model; and

inputting the preprocessed at least one photograph to the pretrained recognition model to recognize vehicle use information corresponding to the preprocessed photograph based on the corresponding license plate information, and sending the vehicle use information to the terminal device, wherein the terminal device displays a vehicle-use-recognition operation interface including a single-photograph recognition control and a multi-photograph recognition control;

if the acquired photograph is a single photograph of a vehicle, receiving a first instruction for recognizing vehicle use information of the single photograph having license plate information of the vehicle sent by the terminal device, and sending the vehicle use information of the single photograph to the terminal device, wherein the first instruction is issued through the single-photograph recognition control to the electronic device; or

if the acquired photograph comprises multiple photographs of a plurality of vehicles, receiving a second instruction for recognizing vehicle use information the multiple photographs having license plate information of the plurality of vehicles sent by the terminal device, and sending a title of each of the multiple photographs as well as the corresponding vehicle use information of each of the multiple photographs to the terminal device, wherein the second instruction is issued through the multi-photograph recognition control to the electronic device.

14. The computer-readable storage medium of claim 13, wherein preprocessing the acquired photograph such that the preprocessed photograph matches the input parameters of the pretrained recognition model comprises:

whitening the acquired photograph to filter out noise pixels in the acquired photograph, wherein the whitened photograph has a pixel mean of 0 and a pixel variance of 1; and

adjusting a size of the whitened paragraph according to input dimensions of the pretrained recognition model.