【CLAIMS】

【Claim 1】

A distributed learning method of a server managing an ID card recognition model, the distributed learning method comprising:

releasing an ID card recognition model performing at least one convolution operation on an ID card image captured in a user terminal so that the user terminal uses the ID card recognition model;

receiving update information of the ID card recognition model generated according to an ID card recognition result of the released ID card recognition model; and

verifying the update information received from the user terminal and updating the ID card recognition model using the verified update information, wherein the receiving the update information of the ID card recognition model comprises:

receiving weight change information of a layer performing the convolution operation as the update information by comparing an output value of the ID card recognition model with the user response.

【Claim 2】

The distributed learning method of claim 1, wherein the update information is generated using a user response for the ID card recognition result provided through the user

terminal.

【Claim 3】

The distributed learning method of claim 1, wherein the updating the ID card recognition model comprises:

updating the ID card recognition model by verifying the received update information based on the layer or a version of the ID card recognition model.

【Claim 4】

The distributed learning method of claim 1, further comprising:

re-releasing the updated ID card recognition model to the user terminal,

wherein the updating the ID card recognition model comprises updating the ID card recognition model using the received update information according to a release period of the released or re-released ID card recognition model.

【Claim 5】

The distributed learning method of claim 1, wherein the ID card recognition model generates one-time update information according to an input of a captured single ID card image.

【Claim 6】

The distributed learning method of claim 2, wherein the user terminal performs a training process of training the ID card recognition model in a background environment according to an input of the ID card recognition result reflecting the user response, and transmits the update information to the server.

【Claim 7】

A distributed learning server of an ID card recognition model, the distributed learning server comprising:

an ID card recognition model providing unit configured to release an ID card recognition model performing at least one convolution operation on an ID card image captured in a user terminal so that the user terminal uses the ID card recognition model;

an update information receiving unit configured to receive update information of the ID card recognition model generated according to a result of recognizing an ID card of the released ID card recognition model; and

an ID card recognition model updating unit configured to verify the update information received from the user terminal and updating the ID card recognition model using the verified update information, wherein the update information receiving unit is further configured to receive

weight change information of a layer performing the convolution operation as the update information by comparing an output value of the ID card recognition model with the user response.

【Claim 8】

The distributed learning server of claim 7, wherein the update information is generated using a user response for the ID card recognition result provided through the user terminal.

【Claim 9】

The distributed learning server of claim 7, wherein the ID card recognition model updating unit is further configured to update the ID card recognition model by verifying the received update information based on the layer or a version of the ID card recognition model.

【Claim 10】

The distributed learning server of claim 7,

wherein the ID card recognition model providing unit is further configured to re-release the updated ID card recognition model to the user terminal, and

wherein the ID card recognition model updating unit is further configured to update the ID card recognition model

using the received update information according to a release period of the released or re-released ID card recognition model.

【Claim 11】

The distributed learning server of claim 7, wherein the ID card recognition model generates one-time update information according to an input of a captured single ID card image.

【Claim 12】

The distributed learning server of claim 8, wherein the user terminal performs a training process of training the ID card recognition model in a background environment according to an input of the ID card recognition result reflecting the user response, and transmits the update information to the server.

【Claim 13】

A distributed learning method of an ID card recognition model, the distributed learning method comprising:

receiving an ID card image;

outputting an ID card recognition result using an ID card recognition model that performs at least one convolution operation on the input ID card image;

training the ID card recognition model using the ID card recognition result and generating update information regarding the at least one convolution operation; and

transmitting the update information to a server updating the ID card recognition model,

wherein the generating the update information comprises:

generating weight change information of a layer performing the convolution operation as the update information by comparing an output value of the ID card recognition model with a user response.

【Claim 14】

The distributed learning method of claim 13, wherein the update information is generated using a user response for the ID card recognition result provided through the user terminal.

【Claim 15】

The distributed learning method of claim 13, wherein the ID card recognition model updates by verifying the received update information based on the layer or a version of the ID card recognition model according to a release period of the ID card recognition model.

【Claim 16】

A user terminal device storing an application for distributed learning of an ID card recognition model, the user terminal comprising:

an input unit configured to receive an ID card image;

a processor configured to perform at least one convolution operation on the input ID card image, output an ID card recognition result, and generate update information on the at least one convolution operation using a user response with respect to the ID card recognition result by using the ID card recognition model; and

a transmitting unit configured to transmit the update information to a server that updates the ID card recognition model,

wherein the transmitting unit transmit weight change information of a layer performing the convolution operation as the update information by comparing an output value of the ID card recognition model with a user response.

【Claim 17】

A program stored in a computer-readable recording medium to enable one or more computers to perform the operations of each of the methods of any of claims 1 to 15.