

【CLAIMS】

【Claim 1】

A neural network training method using a de-identified image, performed by a neural network training server, the method comprising:

encoding a first image represented by a vector of n -th dimensions into a second image of predetermined p -th dimensions;

decoding the second image into a third image of q -th dimensions;

inputting the third image to the neural network and extracting object information included in the third image; and

training at least one parameter information used for a computation in the neural network by using the extracted object information, and a de-identification parameter information used for the encoding or decoding computation based on the extracted object information,

wherein the training comprises updating the de-identification parameter information determining a compression rate of the encoding computation after updating the at least one parameter information used for the computation in the neural network by backpropagating an error of the extracted object information compared with a target value of the first image.

【Claim 2】

The method of claim 1, wherein a size of p-th dimensions is determined based on the compression rate of the encoding computation.

【Claim 3】

The method of claim 2, wherein n-th dimensions and q-th dimensions have the same size.

【Claim 4】

The method of claim 1, further comprising storing the second image encoded in the determined p-th dimensions,

wherein the decoding comprises decoding the stored second image into the third image when the neural network performs the training.

【Claim 5】

The method of claim 1, wherein the decoding comprises decoding the second image to have a data value different from that of the first image when decoding the second image in the q-th dimensions.

【Claim 6】

A neural network training server using a de-identified image, the server comprising:

a de-identification unit configured to encode a first

image represented by a vector of n -th dimensional vector into a second image of predetermined p -th dimension, and then decode the second image into a third image of q -th dimension; and

a training unit configured to input the third image to the neural network and extract an object information included in the third image to train at least one parameter information used for a computation in the neural network, and a de-identification parameter information used for the encoding or decoding computation based on the extracted object information,

wherein the training unit is configured to update, the de-identification parameter information determining a compression rate of the encoding computation after updating the at least one parameter information used for the computation in the neural network by backpropagating an error of the extracted object information compared with a target value of the first image.

【Claim 7】

The server of claim 6, further comprising a database storing the second image encoded in determined p -th dimensions,

wherein the de-identification unit is configured to decode the stored second image into the third image when the neural network performs the training.

【Claim 8】

The server of claim 6, wherein the de-identification unit is configured to decode the second image to have a data value different from that of the first image when decoding the second image in the q -th dimensions.

【Claim 9】

One or more computers and a program stored in a non-transitory computer-readable recording medium to allow the one or more computers to perform operations of each method of any one of claims 1 to 5 when executed by the one or more computers.