

Claims

1. A combined-learning-based Internet of Things data service method, comprising:

acquiring a data processing result of an edge side for target user data;

5 performing combined learning training based on a combined learning engine, the data processing result and the target user data, to obtain a combined learning training model, wherein the step of performing combined learning training based on a combined learning engine, the data processing result and the target user data, to obtain a combined learning training model further comprises:

10 acquiring an initial model;

integrating an objective machine learning algorithm and an objective deep learning algorithm into the combined learning engine;

adding the data processing result and the target user data to a sample set, to obtain a sample set after data addition;

15 encrypting data in the sample set after data addition to obtain an encrypted sample set as a training sample set for training the initial model; and

performing combined learning training on the initial model by using the training sample set and the combined learning engine, to obtain the combined learning training model;

storing the combined learning training model in a target model base; and

20 calling a service-side requirement by using the target model base.

2. The combined-learning-based Internet of Things data service method according to claim 1, wherein, after the step of acquiring a data processing result of an edge side for target user data, the method further comprises:

25 performing data asset management on the data processing result, wherein the data asset management comprises at least one of the following: metadata management, data asset storage, data quality management, data authorization and delivery management, and data security management.

3. The combined-learning-based Internet of Things data service method according to claim 1, wherein a training sample in the training sample set comprises sample input data and sample output data, and the combined learning training model is trained by taking the sample input data as input and the sample output data as expected output.

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4. The combined-learning-based Internet of Things data service method according to claim 1, wherein the step of storing the combined learning training model in a target model base comprises: encapsulating the combined learning training model to obtain an encapsulated combined learning training model;

10 generating an interface of the encapsulated combined learning training model, wherein the interface comprises: a management interface and a call interface; and

storing the encapsulated combined learning training model to the target model base in response to determining completion of generation of the interface.

15 5. The combined-learning-based Internet of Things data service method according to claim 4, wherein the method further comprises:

acquiring a management instruction in response to detecting a management request from a target management user, wherein the management instruction comprises an interface and management content of a managed model; and

20 processing, based on the management instruction, models in the target model base whose interfaces are the same as the interface of the managed model.

6. The combined-learning-based Internet of Things data service method according to claim 4, wherein the method further comprises:

25 acquiring the call interface in response to detecting a call request from a target user;

extracting, from the target model base, a model whose interface is the same as the call interface; and

performing, in response to detecting a combined training request from the target user, combined training on the extracted model and at least one model stored by a terminal device of the target user.

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7. A combined-learning-based Internet of Things data service apparatus, comprising:

an acquisition unit configured to acquire a data processing result of an edge side for target user data;

a training unit configured to perform combined learning training based on a combined learning engine, the data processing result and the target user data, to obtain a combined learning training model, wherein the step of performing combined learning training based on a combined learning engine, the data processing result and the target user data, to obtain a combined learning training model further comprises:

acquiring an initial model;

integrating an objective machine learning algorithm and an objective deep learning algorithm into the combined learning engine;

adding the data processing result and the target user data to a sample set, to obtain a sample set after data addition;

encrypting data in the sample set after data addition to obtain an encrypted sample set as a training sample set for training the initial model; and

performing combined learning training on the initial model by using the training sample set and the combined learning engine, to obtain the combined learning training model;

a storage unit configured to store the combined learning training model in a target model base;

and

a call unit configured to call a service-side requirement by using the target model base.

8. An electronic device, comprising:

one or more processors; and

a storage apparatus storing one or more programs;

the one or more programs, when executed by the one or more processors, causing the one or more processors to perform the method according to claim 1.

9. A computer-readable medium, storing a computer program, wherein, when the program is executed by a processor, the method according to claim 1 is performed.