

Claims

1. A device fault prediction method, comprising:

determining feature information of a target device and detection point data information corresponding to the target device;

determining, based on the feature information of the target device and the detection point data information corresponding to the target device, a probability distribution model of feature data of the target device and a probability distribution model of detection point data with unshared data;

determining a weight of the unshared data according to the probability distribution model of the feature data and the probability distribution model of the detection point data;

establishing a federated learning model according to the unshared data, the weight of the unshared data and a device fault label corresponding to the unshared data; and

predicting a device fault of the target device according to the federated learning model.

2. The method according to claim 1, wherein the step of determining a weight of the unshared data according to the probability distribution model of the feature data and the probability distribution model of the detection point data comprises:

determining a target device distribution probability of the unshared data according to the probability distribution model of the feature data;

determining a detection point distribution probability of the unshared data according to the probability distribution model of the detection point data; and

determining a ratio of the target device distribution probability of the unshared data to the detection point distribution probability of the unshared data as the weight of the unshared data.

3. The method according to claim 1, wherein the step of determining, based on the feature information of the target device and the detection point data information corresponding to the target device, a probability distribution model of feature data of the target device and a probability distribution model of detection point data with unshared data comprises:

determining, based on the feature information of the target device and the detection point data information corresponding to the target device, the feature data of the target device and the detection point data with the unshared data;

calculating data distribution of the feature data according to a feature data parameter model, and determining the feature data parameter model with determined parameters as the probability distribution model of the feature data; and

calculating data distribution of the detection point data according to a detection point data parameter model, and determining the detection point data parameter model with determined parameters as the probability distribution model of the detection point data.

4. The method according to claim 1, wherein the step of establishing a federated learning model according to the unshared data, the weight of the unshared data and a device fault label corresponding to the unshared data comprises:

determining a detection point local model according to the unshared data, the weight of the unshared data and the device fault label corresponding to the unshared data; and

establishing the federated learning model according to at least two detection point local models.

5. A device fault prediction apparatus, comprising:

an information determination module configured to determine feature information of a target device and detection point data information corresponding to the target device;

a probability model determination module configured to determine, based on the feature information of the target device and the detection point data information corresponding to the target device, a probability distribution model of feature data of the target device and a probability distribution model of detection point data with unshared data;

a weight determination module configured to determine a weight of the unshared data according to the probability distribution model of the feature data and the probability distribution model of the detection point data;

a model establishment module configured to establish a federated learning model according to the unshared data, the weight of the unshared data and a device fault label corresponding to the unshared data; and

a prediction module configured to predict a device fault of the target device according to the federated learning model.

6. A readable medium, comprising execution instructions, when a processor of an electronic device executes the execution instructions, the electronic device performing the method according to any one of claims 1.

7. An electronic device, comprising a processor and a memory storing execution instructions, when the processor executes the execution instructions stored by the memory, the processor performing the method according to any one of claims 1.