

ABSTRACT

FEDERATED LEARNING-BASED REGIONAL PHOTOVOLTAIC POWER PROBABILISTIC FORECASTING METHOD AND COORDINATED CONTROL SYSTEM

Disclosed is a federated learning-based regional photovoltaic power probability forecasting method, mainly comprising steps of: pinpointing all photovoltaic power stations in a region which participate in a federated learning framework for probability forecasting, collecting information within a period of time and corresponding photovoltaic power variables, and sampling the variables according to time sequence into a sample dataset; processing missing values and outliers in the sample dataset resulting from the step; splitting the sample data set of the photovoltaic power stations into a training set and a testing set according to a preset proportion; normalizing the training set and the testing set, respectively; creating a federated learning framework; building, by a central server, a global forecasting model based on forecast requirements, defining a training error function and a precision requirement, and distributing the network architecture and initialized parameters to all photovoltaic power stations.

Figure 2