CLAIMS

What is claimed is:

1. A method for modeling a photovoltaic curve, comprising:

acquiring photovoltaic data at various time points within a specified time period;

dividing the photovoltaic data at the various time points into at least two photovoltaic data packets, different packets in the at least two photovoltaic data packets corresponding to different time periods; and

establishing, according to the respective photovoltaic data of the at least two photovoltaic data packets, packet photovoltaic power curves respectively corresponding to the at least two photovoltaic data packets.

2. The method according to claim 1, wherein prior to establishing, according to the respective photovoltaic data of the at least two photovoltaic data packets, the packet photovoltaic power curves respectively corresponding to the at least two photovoltaic data packets, the method further comprises:

performing data cleaning on the respective photovoltaic data of the at least two photovoltaic data packets to remove invalid photovoltaic data in the at least two photovoltaic data packets;

wherein establishing, according to the respective photovoltaic data of the at least two photovoltaic data packets, the packet photovoltaic power curves respectively corresponding to the at least two photovoltaic data packets comprises:

establishing, according to photovoltaic data of the at least two photovoltaic data packets subjected to the data cleaning, the packet photovoltaic power curves respectively corresponding to the at least two photovoltaic data packets.

3. The method according to claim 2, wherein the photovoltaic data includes a generated power of a photovoltaic power generation device at a corresponding time point, and an irradiance collected by a radiation detection device at a corresponding time point; the irradiation detection device is disposed at the photovoltaic power generation device; and performing the data cleaning on the respective photovoltaic data of the at least two photovoltaic data packets comprises:

cleaning abnormal data in the at least two photovoltaic data packets to obtain the at least two photovoltaic data packets subjected to abnormal data cleaning, wherein the abnormal data refers to data generated in the case of failure of the irradiation detection device;

removing low-relevancy data from the at least two photovoltaic data packets subjected to the abnormal data cleaning, to obtain the at least two photovoltaic data packets subjected to low-relevancy data cleaning, wherein the low-relevancy data refers to photovoltaic data whose relevancy is lower than a relevancy threshold, and the relevancy is intended to indicate a correlation between the generated power and the irradiance in the corresponding photovoltaic data;

removing outlier data respectively based on a local outlier factor algorithm from the at least two photovoltaic data packets subjected to the low-relevancy data cleaning, to acquire the at least two photovoltaic data packets from which the outlier data is removed, wherein the outlier data refers to photovoltaic data away from a data concentration area; and

acquiring, according to the at least two photovoltaic data packets from which the outlier data is removed, the at least two photovoltaic data packets subjected to the data cleaning.

4. The method according to claim 3, wherein cleaning the abnormal data in the at least two photovoltaic data packets to obtain the at least two photovoltaic data packets subjected to the abnormal data cleaning comprises:

cleaning missing data in the at least two photovoltaic data packets, wherein the missing data refers to data in which the irradiance data or the generated power data in the photovoltaic power data is missed;

cleaning nighttime invalid data in the at least two photovoltaic data packets, wherein the nighttime invalid data refers to all data obtained by the photovoltaic power detection device during the nighttime detection;

cleaning overrun data in the at least two photovoltaic data packets, wherein the overrun data refers to data that exceeds a reasonable irradiance data range and/or a reasonable power data range; and

cleaning dead numbers in the at least two photovoltaic data packets, wherein the dead numbers refer to data that appears four times or more in a time sequence.

5. The method according to claim 3, wherein removing the low-relevancy data from the at least two photovoltaic data packets subjected to the abnormal data cleaning, to obtain the at least two photovoltaic data packets subjected to the low-relevancy data cleaning, comprises:

establishing sliding windows, wherein each of the sliding window is established by the photovoltaic data in the at least two photovoltaic data packets subjected to the abnormal data cleaning in a time sequence by taking a time resolution of the photovoltaic data in the at least two photovoltaic data packets subjected to the abnormal data cleaning as a step length, and each n pieces of photovoltaic data as a set, wherein the each n pieces of photovoltaic data is considered as a set of data, and one of the sliding windows contains the set of data; and the time resolution refers to a minimum time interval at which the irradiation detection device collects two pieces of adjacent photovoltaic data at a corresponding time point;

calculating a Pearson correlation coefficient of the photovoltaic data within each of the sliding windows;

calculating a correlation value of the photovoltaic data in the at least two photovoltaic data packets subjected to the abnormal data cleaning, wherein the correlation value refers to an average value which is solved, by sorting the Pearson correlation coefficients of a plurality of sliding windows in which the photovoltaic data in the at least two photovoltaic data packets subjected to the abnormal data cleaning is located in an descending order, for values of the middle n-2 Pearson correlation coefficients;

determining a correlation threshold, wherein the correlation threshold refers to a correlation threshold corresponding to each of the data segments divided based on irradiance data segments; and

cleaning, according to the correlation threshold, the photovoltaic data in the at least two photovoltaic data packets subjected to the abnormal data cleaning.

6. The method according to claim 3, wherein acquiring, according to the at least two photovoltaic data packets from which the outlier data is removed, the at least two photovoltaic data packets subjected to the data cleaning comprises:

determining over-cleaned data from respective low-relevancy data of the at least two photovoltaic data packets based on an inter-quartile range algorithm, wherein the over-cleaned data is photovoltaic data in a data concentration area and in a preset area around the data concentration area; and

recovering the respective over-cleaned data of the at least two photovoltaic data packets respectively into the at least two photovoltaic data packets from which the outlier data is removed, to obtain the at least two photovoltaic data packets subjected to the data cleaning.

7. The method according to claim 1, wherein establishing, according to the respective photovoltaic data of the at least two photovoltaic data, the packet photovoltaic power curves respectively corresponding to the at least two photovoltaic data packets packets comprises:

performing spline interpolation fitting on the respective photovoltaic data of the at least two photovoltaic data packets to obtain a photovoltaic power curve of the photovoltaic power generation device.

8. An apparatus for modeling a photovoltaic curve, comprising:

an acquiring module, configured to acquire photovoltaic data at various time points within a specified time period;

a packetizing module, configured to divide the photovoltaic data at various time points into at least two photovoltaic data packets, different packets in the at least two photovoltaic data packets corresponding to different time periods; and

an establishing module, configured to establish, according to the respective photovoltaic data of the at least two photovoltaic data packets, packet photovoltaic power curves respectively corresponding to the at least two photovoltaic data packets.

9. A computer device, comprising a processor and a memory; wherein the memory

is configured to store at least one instruction, at least one program, a code set, or an instruction set therein, which, when loaded and executed by the processor, enables the processor to perform the method for modeling the photovoltaic curve as defined in any one of claims 1 to 7.

10. A computer readable storage medium, wherein the storage medium is configured to store at least one instruction, at least one program, a code set, or an instruction set, which, when loaded and executed by a processor, enables the processor to perform the method for modeling the photovoltaic curve as defined in any one of claims 1 to 7.