What is claimed is:

1. A computer-implemented method of collaborative filtering in combination with time factor for a user preference prediction, comprising:

establishing, by a server, an exponential smoothing model;

acquiring, by the server, a time period proposed for the exponential smoothing model, the time period being defined based on a specified product and comprising a plurality of time cycles associated with the specified product;

acquiring, by the server, a plurality of user identifiers and a plurality of user preference degree values of the plurality of user identifiers over the specified product during the plurality of time cycles, each of the plurality of user preference degree values being associated with one of the plurality of user identifiers, one of the plurality of time cycles, and the specified product;

performing, by the server, iterative calculations to the plurality of user preference degree values utilizing the exponential smoothing model, and obtaining smoothing results corresponding to the plurality of time cycles;

generating, by the server, a sparse matrix utilizing the plurality of user identifiers and the smoothing results corresponding to the plurality of time cycles, the sparse matrix comprising a plurality of user preference degrees to be predicted;

acquiring, by the server, a collaborative filtering model and inputting the smoothing results corresponding to the plurality of time cycles into the collaborative filtering model;

training, by the server, through the collaborative filtering model, calculating and obtaining predictive values of the plurality of user preference degrees to be predicted in the sparse matrix;

acquiring positive samples and negative samples corresponding to the plurality of the user preference degree values according to product identifiers and the plurality of user identifiers;

splitting the negative samples, and obtaining a plurality of split negative samples, wherein a difference between the number of split negative samples and the number of positive samples is within a preset range;

acquiring a disaggregated model, training the disaggregated model utilizing the positive samples and the split negative samples, and obtaining a plurality of trained disaggregated models; and

fitting the plurality of trained disaggregated models and calculating and obtaining a disaggregating weight corresponding to each trained disaggregating model.

2. The computer-implemented method of claim 1, wherein a formula of the exponential smoothing model comprises:

$$P_{t+1}=a*P_t+(1-a)*P_{t-1}$$

wherein a is an exponential coefficient corresponding to a product identifier; P_{t+1} is the user preference degree value corresponding to the next time cycle; P_t is the user preference degree value corresponding to the current time cycle; and P_{t-1} is the user preference degree value corresponding to the last time cycle.

3. The computer-implemented method of claim 1, wherein after calculating and obtaining predictive values of the plurality of user preference degrees to be predicted, the method further comprises:

acquiring a dimension corresponding to the user preference degree value;

collecting statistics of the user preference degree value in a plurality of dimensions according to the user identifiers;

regularizing a statistical result and obtaining a multi-dimensional vector corresponding to the user identifiers; and

calculating a similarity degree of user preferences between the user identifiers according to multi-dimensional vectors.

4. The computer-implemented method of claim 1, wherein after calculating and obtaining predictive values of the plurality of user preference degrees to be predicted, the method further comprises:

acquiring sample data to be disaggregated; and

disaggregating the sample data to be disaggregated utilizing the trained disaggregated models and the disaggregating weight.

5. An apparatus of collaborative filtering in combination with time factor for a user preference prediction, comprising:

a model establishing module configured to establish an exponential smoothing model;

an acquiring module configured to acquire a time period proposed for the exponential smoothing model, the time period being defined based on a specified product and comprising a plurality of time cycles associated with the specified product, and to acquire a plurality of user identifiers and a plurality of user preference degree values of the plurality of user identifiers over the specified product during the plurality of time cycles;

a smoothing module configured to perform iterative calculations to the plurality of user preference degree values utilizing the exponential smoothing model, and obtain smoothing results corresponding to the plurality of time cycles;

a matrix generating module configured to generate a sparse matrix utilizing the plurality of user identifiers and the smoothing results corresponding to the plurality of time cycles, the sparse matrix comprising a plurality of user preference degrees to be predicted;

the acquiring module is further configured to acquire a collaborative filtering model;

a first training module configured to input the smoothing results corresponding to the plurality of time cycles to the collaborative filtering model; the first training module being configured to train through the collaborative filtering model, and calculate and obtain predictive values of the plurality of user preference degrees to be predicted in the sparse matrix;

the acquiring module is further configured to acquire positive samples and negative samples corresponding to the plurality of user preference degree values according to product identifiers and the plurality of user identifiers;

a splitting module configured to split the negative samples, and obtaining a plurality of split negative samples, wherein a difference between the number of split negative samples and the number of positive samples is within a preset range;

the acquiring module is further configured to acquire a disaggregated model;

a second training module configured to train the disaggregated model utilizing the positive samples and the split negative samples, and obtaining a plurality of trained disaggregated models; and

a fitting module configured to fit the plurality of trained disaggregated models and calculating and obtaining a disaggregating weight corresponding to each trained disaggregated model.

6. The apparatus of claim 5, wherein a formula of the smoothing model comprises:

$$P_{t+1}=a*P_t+(1-a)*P_{t-1};$$

wherein a is an exponential coefficient corresponding to a product identifier; P_{t+1} is the user preference degree value corresponding to the next time cycle; P_t is the user preference degree value corresponding to the current time cycle; and P_{t-1} is the user preference degree value corresponding to the last time cycle.

7. The apparatus of claim 5, wherein the acquiring module is further configured to acquire a dimension corresponding to the user preference degree value;

the apparatus further comprises:

a statistic collecting module configured to collect statistics of user preference degree values in a plurality of dimensions according to the user identifiers;

a regularization module configured to regularize a statistical result and obtaining multi-dimensional vectors corresponding to the user identifiers; and

a similarity statistics collecting module configured to calculate the similarity degree of user preferences between the user identifiers according to the multi-dimensional vectors.

8. The apparatus of claim 5, wherein the acquiring module is further configured to acquire sample data to be disaggregated;

the apparatus further comprises:

a disaggregated module configured to disaggregate the sample data to be disaggregated utilizing the trained disaggregated models and the disaggregating weight.

9. A server for a user preference prediction comprising a processor; and a memory storing instructions, which, when executed by the processor cause the processor to perform steps comprising:

establishing, by the server, an exponential smoothing model;

acquiring, by the server, a time period proposed for the exponential smoothing model, the time period being defined based on a specified product and comprising a plurality of time cycles associated with the specified product;

acquiring, by the server, a plurality of user identifiers and a plurality of user preference degree values of the plurality of user identifiers over the specified product during the plurality of time cycles, each of the plurality of user preference degree values being associated with one of the plurality of user identifiers, one of the plurality of time cycles, and the specified product;

performing, by the server, iterative calculations to the plurality of user preference degree values utilizing the exponential smoothing model, and obtaining smoothing results corresponding to the plurality of time cycles;

generating, by the server, a sparse matrix utilizing the plurality of user identifiers and the smoothing results corresponding to the plurality of time cycles, the sparse matrix comprising a plurality of user preference degrees to be predicted;

acquiring, by the server, a collaborative filtering model and inputting the smoothing results corresponding to the plurality of time cycles into the collaborative filtering model;

training, by the server, through the collaborative filtering model, calculating and obtaining predictive values of the plurality of user preference degrees to be predicted in the sparse matrix;

acquiring positive samples and negative samples corresponding to the user preference degree values according to product identifiers and the plurality of user identifiers;

splitting the negative samples, and obtaining a plurality of split negative samples, wherein a difference between the number of split negative samples and the number of positive samples is within a preset range;

acquiring a disaggregated model, training the disaggregated model utilizing the positive samples and the split negative samples, and obtaining a plurality of trained disaggregated models; and

fitting the plurality of trained disaggregated models and calculating and obtaining a disaggregating weight corresponding to each trained disaggregating model.

10. The server of claim 9, wherein a formula of the smoothing model comprises:

$$P_{t+1}=a*P_t+(1-a)*P_{t-1};$$

wherein a is an exponential coefficient corresponding to a product identifier; P_{t+1} is the user preference degree value corresponding to the next time cycle; P_t is the user preference degree value corresponding to the current time cycle; and P_{t-1} is the user preference degree value corresponding to the last time cycle.

11. The server of claim 9, wherein after calculating and obtaining predictive values of the plurality of user preference degrees to be predicted in the sparse matrix, the method further comprises:

acquiring a dimension corresponding to the user preference degree value;

collecting statistics of the user preference degree value in a plurality of dimensions according to the user identifiers;

regularizing a statistical result and obtaining a multi-dimensional vector corresponding to the user identifiers; and

calculating a similarity degree of user preferences between the user identifiers according to the multi-dimensional vectors.

12. The server of claim 9, wherein after calculating and obtaining a disaggregating weight corresponding to each trained disaggregated model, the processor further executes the instructions to provide:

acquiring sample data to be disaggregated; and

disaggregating the sample data to be disaggregated utilizing the trained disaggregated models and the disaggregating weight.

13. At least one non-transitory computer-readable storage medium storing computer-readable instructions for a user preference prediction that, when executed by at least one processors, cause the at least one processor to perform steps comprising:

establishing, by the processor, an exponential smoothing model;

acquiring, by the processor, a time period proposed for the exponential smoothing model, the time period being defined based on a specified product and comprising a plurality of time cycles associated with the specified product;

acquiring, by the processor, a plurality of user identifiers and a plurality of user preference degree values of the plurality of user identifiers over the specified product during the plurality of time cycles, each of the plurality of user preference degree values being associated with one of the plurality of user identifiers, one of the plurality of time cycles, and the specified product;

performing, by the processor, iterative calculations to the plurality of user preference degree values utilizing the exponential smoothing model, and obtaining smoothing results corresponding to the plurality of time cycles;

generating, by the processor, a sparse matrix utilizing the plurality of user identifiers and the smoothing results corresponding to the plurality of time cycles, the sparse matrix comprising a plurality of user preference degrees to be predicted;

acquiring a collaborative filtering model and inputting the smoothing results corresponding to the time cycles into the collaborative filtering model;

training through the collaborative filtering model, calculating and obtaining

predictive values of the plurality of user preference degrees to be predicted in the sparse matrix;

acquiring positive samples and negative samples corresponding to the user preference degree values according to product identifiers and the plurality of user identifiers;

splitting the negative samples, and obtaining a plurality of split negative samples, wherein a difference between the number of split negative samples and the number of positive samples is within a preset range;

acquiring a disaggregated model, training the disaggregated model utilizing the positive samples and the split negative samples, and obtaining a plurality of trained disaggregated models; and

fitting the plurality of trained disaggregated models and calculating and obtaining a disaggregating weight corresponding to each trained disaggregating model.

14. The storage medium of claim 13, wherein a formula of the smoothing model comprises:

$$P_{t+1}=a*P_t+(1-a)*P_{t-1};$$

wherein a is an exponential coefficient corresponding to a product identifier; P_{t+1} is the user preference degree value corresponding to the next time cycle; P_t is the user preference degree value corresponding to the current time cycle; and P_{t-1} is the user preference degree value corresponding to the last time cycle.

15. The storage medium of claim 13, after calculating and obtaining predictive values of the plurality of user preference degrees to be predicted, the at least one processor further executes the instructions to provide:

acquiring a dimension corresponding to the user preference degree value;

collecting statistics of the user preference degree value in a plurality of dimensions according to the user identifiers;

regularizing a statistical result and obtaining a multi-dimensional vector

corresponding to the user identifiers; and

calculating a similarity degree of user preferences between the user identifiers according to the multi-dimensional vectors.

16. The storage medium of claim 13, wherein after calculating and obtaining a disaggregating weight corresponding to each trained disaggregated model, the at least one processor further executes the instructions to provide:

acquiring sample data to be disaggregated; and

disaggregating the sample data to be disaggregated utilizing the trained disaggregated models and the disaggregating weight.