CLAIMS

What is claimed is:

1. An intent recognition method, comprising:

preprocessing obtained data to be recognized to obtain target data;

performing feature extraction processing on the target data based on an intent recognition model to obtain a linear feature and a non-linear feature of the target data, wherein the intent recognition model is obtained by optimizing and training a bidirectional encoder representations from transformers (BERT) model, wherein the intent recognition model comprises an optimized BERT unit and a non-linear feature extraction unit, wherein the optimized BERT unit comprises a BertEmbedding layer, a BertEncoder layer, a first fully-connected layer, a first normalization layer, a second normalization layer, and a maximum pooling layer, and wherein the non-linear feature is obtained by performing non-linear transformation processing on the linear feature of the target data based on the non-linear feature extraction unit; and

performing intent recognition processing based on the linear feature, the non-linear feature, and the intent recognition model to obtain an intent recognition result of the data to be recognized.

2. The method according to claim 1, wherein the preprocessing obtained data to be recognized to obtain target data comprises:

performing word segmentation processing on the data to be recognized based on a predetermined word segmentation method to obtain a word segmentation result;

determining identifier information of each character/word in the word segmentation result;

performing splicing processing on the identifier information based on position information of each character/word in the word segmentation result in the data to be recognized, to obtain an identifier information sequence; and

converting the identifier information sequence into target data, wherein the target data comprise a predetermined amount of identifier information.

3. The method according to claim 2, wherein the performing feature extraction processing on the target data based on an intent recognition model to obtain a linear feature and a non-linear feature of the target data comprises:

performing linear feature extraction processing on the target data based on the optimized BERT unit to obtain the linear feature of the target data; and

performing non-linear transformation processing on the linear feature of the target data based on the non-linear feature extraction unit to obtain the non-linear feature of the target data.

4. The method according to claim 3, wherein the performing linear feature extraction processing on the target data based on the optimized BERT unit to obtain the linear feature of the target data comprises:

performing conversion processing on each piece of identifier information in the target data by using the BertEmbedding layer to obtain converted data of each piece of identifier information;

determining an association relationship between the converted data by using the BertEncoder layer, and generating a first feature matrix of the target data based on the association relationship;

performing conversion processing on the first feature matrix by using the first fully-connected layer to obtain a second feature matrix;

performing first normalization processing on the second feature matrix by using the first normalization layer to obtain a third feature matrix;

performing first combination processing on the first feature matrix and the third feature matrix to obtain a fourth feature matrix;

performing second normalization processing on the fourth feature matrix by using the second normalization layer to obtain a fifth feature matrix;

performing second combination processing on the first feature matrix and the fifth feature matrix to obtain a sixth feature matrix; and

performing maximum pooling processing on the sixth feature matrix by using the maximum pooling layer to obtain the linear feature of the target data.

5. The method according to claim 3, wherein the non-linear feature extraction unit comprises a third normalization layer and a non-linear layer, and the performing non-linear transformation processing on the linear feature of the target data based on the non-linear feature extraction unit to obtain the non-linear feature of the target data comprises:

performing third normalization processing on the linear feature by using the third normalization layer to obtain a target linear feature; and

performing non-linear transformation processing on the target linear feature by using the non-linear layer to obtain the non-linear feature of the target data.

6. The method according to claim 5, wherein the performing intent recognition processing based on the linear feature, the non-linear feature, and the intent recognition model to obtain an intent recognition result of the data to be recognized comprises:

determining an intent classification label corresponding to the data to be recognized based on an intent recognition unit of the intent recognition model, the linear feature, and the non-linear feature; and

determining the intent recognition result of the data to be recognized based on the intent classification label.

7. The method according to claim 6, wherein the intent recognition unit comprises a fourth normalization layer and a second fully-connected layer, and the determining an intent classification label corresponding to the data to be recognized based on an intent recognition unit of the intent recognition model, the linear feature, and the non-linear feature comprises:

performing first combination processing on the target linear feature and the non-linear feature to obtain a combined feature;

performing fourth normalization processing on the combined feature by using the fourth normalization layer to obtain a target combined feature;

mapping the target combined feature to probabilities in a one-to-one correspondence with predetermined intent classification labels by using the second fully-connected layer; and

obtaining at least one target probability greater than a probability threshold from the probabilities, and determining an intent classification label corresponding to the target probability as the intent classification label corresponding to the data to be recognized.

8. The method according to claim 7, wherein the determining the intent recognition result of the data to be recognized based on the intent classification label comprises:

determining whether the intent classification label comprises a predetermined collision labels; and

if yes, determining the intent recognition result of the data to be recognized based on an intent classification label with a largest probability in the collision label.

9. The method according to claim 1, wherein the method further comprises:

obtaining a sample data set to be trained, wherein each piece of sample data in the sample data set is labeled with an intent classification label; and

performing model training processing based on the sample data set to obtain the intent recognition model.

10. The method according to claim 9, wherein the performing model training processing based on the sample set to obtain the intent recognition model comprises:

iteratively inputting the sample data set into a model to be trained, and performing feature extraction processing on each piece of sample data in the training set based on the model to be trained to obtain a linear feature and a non-linear feature of each piece of sample data;

performing intent recognition processing based on the linear feature, the non-linear feature, and the model to be trained to obtain a predicted intent classification label of the sample data; and

if determining, based on a predetermined loss function, the intent classification label that the sample data is labeled with, and the predicted intent classification label, that a predetermined training stop condition is satisfied, determining a corresponding model to be trained as the intent recognition model.

11. An intent recognition apparatus, comprising:

a preprocessing module, configured to preprocess obtained data to be recognized to obtain target data;

a feature extraction module, configured to perform feature extraction processing on the target data based on an intent recognition model to obtain a linear feature and a non-linear feature of the target data, wherein the intent recognition model is obtained by optimizing and training a BERT model, wherein the intent recognition model comprises an optimized BERT unit and a non-linear feature extraction unit, wherein the optimized BERT unit comprises a BertEmbedding layer, a BertEncoder layer, a first fully-connected layer, a first normalization layer, a second normalization layer, and a maximum pooling layer, and wherein the non-linear feature is obtained by performing non-linear transformation processing on the linear feature of the target data based on the non-linear feature extraction unit; and

an intent recognition module, configured to perform intent recognition processing based on the linear feature, the non-linear feature, and the intent recognition model to obtain an intent recognition result of the data to be recognized.

12. An intent recognition device, comprising:

a processor; and

a memory, configured to store computer-executable instructions, wherein when the computer-executable instructions are executed, the processor is enabled to:

preprocess obtained data to be recognized to obtain target data;

perform feature extraction processing on the target data based on an intent recognition model to obtain a linear feature and a non-linear feature of the target data, wherein the intent recognition model is obtained by optimizing and training a BERT model, wherein the intent recognition model comprises an optimized BERT unit and a non-linear feature extraction unit, wherein the optimized BERT unit comprises a BertEmbedding layer, a BertEncoder layer, a first fully-connected layer, a first normalization layer, a second normalization layer, and a maximum pooling layer, and wherein the non-linear feature is obtained by performing non-linear transformation processing on the linear feature of the target data based on the non-linear feature extraction unit; and

perform intent recognition processing based on the linear feature, the non-linear feature, and the intent recognition model to obtain an intent recognition result of the data to be recognized.

13. A storage medium, configured to store computer-executable instructions, wherein when the computer-executable instructions are executed by a processor, the following procedure is implemented:

preprocessing obtained data to be recognized to obtain target data;

performing feature extraction processing on the target data based on an intent recognition model to obtain a linear feature and a non-linear feature of the target data, wherein the intent recognition model is obtained by optimizing and training a BERT model, wherein the intent recognition model comprises an optimized BERT unit and a non-linear feature extraction unit, wherein the optimized BERT unit comprises a BertEmbedding layer, a BertEncoder layer, a first fully-connected layer, a first normalization layer, a second normalization layer, and a maximum pooling layer, and wherein the non-linear feature is obtained by performing non-linear transformation processing on the linear feature of the target data based on the non-linear feature extraction unit; and

performing intent recognition processing based on the linear feature, the non-linear feature, and the intent recognition model to obtain an intent recognition result of the data to be recognized.