What is claimed is:

1. A method of identifying at least one target object for a security inspection CT, comprising:

performing a dimension reduction on three-dimensional CT data to generate a plurality of two-dimensional dimension-reduced views;

performing a target identification on a plurality of two-dimensional views to obtain a set of two-dimensional semantic descriptions of the at least one target object, wherein the plurality of two-dimensional views comprise the plurality of two-dimensional dimension-reduced views; and

performing a dimension increase on the set of two-dimensional semantic descriptions to obtain a three-dimensional recognition result of the at least one target object.

2. The method of identifying the at least one target object for the security inspection CT according to claim 1, wherein the performing a dimension increase on the set of two-dimensional semantic descriptions to obtain a three-dimensional recognition result of the at least one target object comprises:

mapping the set of two-dimensional semantic descriptions to a three-dimensional space by using a back-projection method, so as to obtain a three-dimensional probability map; and

performing a feature extraction on the three-dimensional probability map to obtain the three-dimensional recognition result of the at least one target object.

3. The method of identifying the at least one target object for the security inspection CT according to claim 2, wherein the mapping the set of two-dimensional semantic descriptions to a three-dimensional space by using a back-projection method so as to obtain a three-dimensional probability map comprises:

mapping the set of two-dimensional semantic descriptions to the three-dimensional space by voxel driving or pixel driving so as to obtain a semantic feature matrix, and compressing the semantic feature matrix into the three-dimensional probability map.

4. The method of identifying the at least one target object for the security

inspection CT according to claim 3, wherein the voxel driving comprises:

mapping each voxel in the three-dimensional CT data to a pixel in each two-dimensional view, querying and accumulating a two-dimensional semantic description information corresponding to the pixel, and generating the semantic feature matrix; and

wherein the pixel driving comprises:

mapping each pixel in the two-dimensional view to a straight line in the three-dimensional CT data, traversing each pixel in each two-dimensional view or each pixel in a region of interest, propagating a two-dimensional semantic description information corresponding to the pixel into the three-dimensional space along the straight line, and generating the semantic feature matrix, wherein the region of interest is given by the set of two-dimensional semantic descriptions.

5. The method of identifying the at least one target object for the security inspection CT according to claim 4, wherein in the voxel driving or the pixel driving, a correspondence relationship between the voxel and the pixel is obtained by a mapping function or a lookup table.

6. The method of identifying the at least one target object for the security inspection CT according to claim 2, wherein the performing a feature extraction on the three-dimensional probability map to obtain the three-dimensional recognition result of the at least one target object comprises:

performing the feature extraction on the three-dimensional probability map by using at least one or a combination of an image processing method, a classic machine learning method, or a deep learning method, so as to obtain a set of three-dimensional image semantic descriptions as the three-dimensional recognition result.

7. The method of identifying the at least one target object for the security inspection CT according to claim 6, wherein

a binarization is performed on the three-dimensional probability map to obtain a three-dimensional binary map;

a connected component analysis is performed on the three-dimensional binary map to obtain at least one connected component; and

the set of three-dimensional image semantic descriptions is generated for the at least one connected component.

8. The method of identifying the at least one target object for the security inspection CT according to claim 7, wherein performing the connected component analysis comprises:

performing a connected component labeling on the three-dimensional binary map, and performing a mask operation on each labeled region to obtain the at least one connected component.

9. The method of identifying the at least one target object for the security inspection CT according to claim 7, wherein the generating the set of three-dimensional image semantic descriptions for the at least one connected component comprises:

extracting all probability values for each connected component, performing a principal component analysis to obtain an analysis set, and statistically generating ~~the set of~~a three-dimensional image semantic description~~s~~ by using the analysis set~~ as a valid voxel volume of object~~.

10. The method of identifying the at least one target object for the security inspection CT according to claim 6, wherein the set of three-dimensional image semantic descriptions comprises a category information and/or a confidence level, in units of one or more of voxels, three-dimensional volumes of interest, or three-dimensional CT images; or

the set of three-dimensional image semantic descriptions comprises at least one of a category information, a position information of the at least one target object, or a confidence level, in units of three-dimensional volumes of interest and/or three-dimensional CT images.

11. The method of identifying the at least one target object for the security inspection CT according to claim 10, wherein the position information comprises a three-dimensional bounding box.

12. The method of identifying the at least one target object for the security inspection CT according to claim 1, wherein the set of two-dimensional semantic descriptions comprises a category information and/or a confidence level, in units of one or more of pixels, regions of interest, or two-dimensional images; or

the set of two-dimensional semantic descriptions comprises at least one of a

category information, a confidence level, or a position information of the at least one target object, in units of regions of interest and/or two-dimensional images.

13. The method of identifying the at least one target object for the security inspection CT according to claim 1, wherein performing the target identification on each of the plurality of two-dimensional views comprises:

performing the target identification for two-dimensional images by using at least one or a combination of an image processing method, a classic machine learning method, or a deep learning method.

14. The method of identifying the at least one target object for the security inspection CT according to claim 1, wherein the performing a dimension reduction on three-dimensional CT data to generate a plurality of two-dimensional dimension-reduced views comprises:

setting a plurality of directions for the three-dimensional CT data; and

projecting or rendering according to the plurality of directions.

15. The method of identifying the at least one target object for the security inspection CT according to claim 14, wherein the plurality of directions are arbitrary directions and are not limited to a direction orthogonal to a traveling direction of an object during a detection process.

16. The method of identifying the at least one target object for the security inspection CT according to any one of claims 1 to 15, wherein the plurality of two-dimensional views further comprise a two-dimensional DR image, and the two-dimensional DR image is acquired by a DR imaging device.

17. The method of identifying the at least one target object for the security inspection CT according to claim 16, wherein the three-dimensional recognition result is projected onto the two-dimensional DR image and output as a recognition result of the two-dimensional DR image.

18. An apparatus of identifying at least one target object for a security inspection CT, comprising:

a dimension reduction module configured to perform a dimension reduction on three-dimensional CT data to generate a plurality of two-dimensional dimension-reduced views;

a two-dimensional identification module configured to perform a target identification on a plurality of two-dimensional views to obtain a set of two-dimensional semantic descriptions of the at least one target object, wherein the plurality of two-dimensional views comprise the plurality of two-dimensional dimension-reduced views; and

a dimension increase module configured to perform a dimension increase on the set of two-dimensional semantic descriptions to obtain a three-dimensional recognition result of the at least one target object.

19. A machine-readable storage medium having a program thereon, wherein the program is configured to cause a computer to:

perform a dimension reduction on three-dimensional CT data to generate a plurality of two-dimensional dimension-reduced views;

perform a target identification on a plurality of two-dimensional views to obtain a set of two-dimensional semantic descriptions of the at least one target object, wherein the plurality of two-dimensional views comprise the plurality of two-dimensional dimension-reduced views; and

perform a dimension increase on the set of two-dimensional semantic descriptions to obtain a three-dimensional recognition result of the at least one target object.