CLAIMS

What is claimed is:

1. A detection method, wherein the detection method comprises:

creating a plurality of template images based on a reference object, wherein the reference object includes a plurality of units, and the plurality of template images are unit images with different average grayscale values;

calculating a first average grayscale value of a unit image to be detected;

selecting a first template image from the plurality of template images based on the first average grayscale value, wherein a difference between an average grayscale value of the first template image and the first average grayscale value is smallest in a set of differences between an average grayscale value of each of the plurality of template images and the first average grayscale value; and

performing detection on the unit image to be detected based on the first template image.

2. The detection method according to claim 1, wherein creating a plurality of template images based on the reference object comprises:

scanning the reference object to generate a reference object image, wherein the reference object image includes a plurality of unit images;

selecting one or several unit images from the plurality of unit images to form a first unit image set;

classifying the first unit image set, based on a first average grayscale value interval, to form one or more grayscale classes, wherein each grayscale class includes one or more unit images;

generating a corresponding average grayscale image based on all of unit images in each grayscale class; and

forming each of the plurality of template images according to the average grayscale image of each grayscale class.

3. The detection method according to claim 2, wherein,

the step of forming each of the plurality of template images according to the average grayscale image of each grayscale class comprises:

determining whether there is an average grayscale value difference between any two or more of average grayscale images of the corresponding average grayscale image generated for the reference object is smaller than a second grayscale value interval;

retaining any one of the plurality of average grayscale images as a template image, when there is the average grayscale value difference is less than the second average grayscale value of the second grayscale value interval; or

the step of forming the template image according to the average grayscale image of each grayscale class includes:

using all average grayscale images as a template image.

4. The detection method according to claim 3, wherein creating the plurality of template images based on the reference object comprises:

creating the plurality of template images based on a single reference object; or

creating the plurality of template images based on at least two reference objects, wherein grayscale value ranges of the at least two reference objects at least partially non-overlap.

5. The detection method according to claim 2, wherein classifying the first unit image set based on the first average grayscale value interval to form one or more grayscale classes comprises:

calculating an average grayscale value of each unit image of the first unit image set;

sorting the first unit image set based on the calculated average grayscale value of each unit image to generate an image sequence associated with the first unit image set; and

in the image sequence, classifying the first unit image set based on the first average grayscale value interval, so that the differences between the average grayscale values of all of unit images of each grayscale class are within the first average grayscale value interval.

6. The detection method according to claim 1, wherein performing detection on the unit image to be detected based on the first template image comprises:

determining whether a grayscale value difference between a pixel point of the first template image and a corresponding pixel point of the unit image to be detected exceeds a predetermined threshold; and

determining that the unit image to be detected has a defect in a case where the average grayscale value difference exceeds the predetermined threshold.

7. A detection system, wherein the detection system comprises:

a creation module configured to create a plurality of template images based on a reference object, wherein the reference object includes a plurality of units, and the plurality of template images are unit images with different average grayscale values;

a calculation module configured to calculate a first average grayscale value of a unit image to be detected;

a selection module configured to select a first template image from the plurality of template images based on the first average grayscale value, wherein a difference between an average grayscale value of the first template image and the first average grayscale value is smallest in a set of differences between an average grayscale value of each of the plurality of template images and the first average grayscale value; and

a detection module configured to perform detection on the unit image to be detected based on the first template image.

8. The detection system according to claim 7, wherein the creation module comprises:

a scanning unit configured to scan the reference object to generate a reference object image, wherein the reference object image includes a plurality of unit images;

a forming unit configured to select one or several unit images from the plurality of unit images to form a first unit image set;

a classifying unit configured to classify the first unit image set based on a first average grayscale value interval to form one or more grayscale classes, wherein each grayscale class includes one or more unit images;

a generating unit configured to generate a corresponding average grayscale image based on all of unit images in each grayscale class; and

a storing unit is configured to form each of the plurality of template images according to the average grayscale image of each grayscale class.

9. The detection system according to claim 8, wherein,

the storing unit is configured to:

determine whether there is an average grayscale value difference between any two or more of average grayscale images of the corresponding average grayscale image generated for the reference object is smaller than a second grayscale value interval;

retain any of the plurality of average grayscale images as a template image, when there is the average grayscale value difference is less than the second average grayscale value of the second grayscale value interval; or

the storing unit is configured to:

use all average grayscale images as a template image.

10. The detection system according to claim 9, wherein the creation module is configured to:

create the plurality of template images based on a single reference object; or

create the plurality of template images based on at least two reference objects, wherein grayscale value ranges of the at least two reference objects at least partially non-overlap.

11. The detection system according to claim 8, wherein the classifying unit comprises:

a calculating sub-unit configured to calculate an average grayscale value of each unit image of the first unit image set;

a sorting sub-unit configured to sort the first unit image set based on the calculated average grayscale value of each unit image to generate an image sequence associated with the first unit image set; and

a classifying sub-unit configured to classify the first unit image set based on the first average grayscale value interval in the image sequence, so that the differences between the average grayscale values of all of unit images of each grayscale class are within the first average grayscale value interval.

12. The detection system according to claim 7, wherein the detection module comprises:

a first detecting unit configured to determine whether a grayscale value difference between a pixel point of the first template image and a corresponding pixel point of the unit image to be detected exceeds a predetermined threshold; and

a second detecting unit configured to determine that the unit image to be detected has a defect in a case where the average grayscale value difference exceeds the predetermined threshold.