

CLAIMS

1. An image processing method, comprising:

~~obtaining~~ ~~outputting~~ respective prediction results of a plurality of pixels in a first image by ~~inputting~~ ~~processing~~ the first image to an instance segmentation model for processing, each of the prediction results comprising a semantic prediction result, ~~and~~ a center relative position prediction result and a center region prediction result, wherein the semantic prediction result indicates that the pixel is located in an instance region or in a background region, ~~and~~ the center relative position prediction result indicates a relative position between the pixel and an instance center, and the center region prediction result indicates whether the pixel is located in an instance center region; and

determining at least one first pixel located in the instance region from the plurality of pixels based on the semantic prediction result of each of the plurality of pixels; wherein each of the prediction results further comprises position information of the first pixel; and

determining, for each first pixel, an instance to which the first pixel belongs based on the center relative position prediction result, the position information and the center region prediction result of the first pixel ~~determining an instance segmentation result of the first image based on the semantic prediction result and the center relative position prediction result of each of the plurality of pixels.~~

2. The image processing method according to claim 1, wherein before processing the first image, the method further comprises:

obtaining the first image by preprocessing a second image, so that the first image satisfies a preset contrast ratio and/or a preset grayscale value.

~~3. The image processing method according to claim 1 or 2, wherein determining the instance segmentation result of the first image based on the semantic prediction result and the center relative position prediction result of each~~

of the plurality of pixels comprises:

~~determining at least one first pixel located in the instance region from the plurality of pixels based on the semantic prediction result of each of the plurality of pixels; and~~

5 ~~determining, for each first pixel, an instance to which the first pixel belongs based on the center relative position prediction result of the first pixel.—~~

10 ~~43. The image processing method according to claim 13, wherein each of the prediction result further comprises a center region prediction result, and the center region prediction result indicates whether the pixel is located in an instance center region;~~

~~the method further comprises: determining at least one instance center region of the first image based on the center region prediction result of each of the plurality of pixels; and~~

15 determining the instance to which the first pixel belongs based on the center relative position prediction result, the position information and the center region prediction result of the first pixel comprises:

determining at least one instance center region of the first image based on the center region prediction result of each of the plurality of pixels; and

20 determining an instance center region corresponding to the first pixel from the at least one instance center region based on the center relative position prediction result and the position information of the first pixel.

25 ~~54. The image processing method according to claim 34, wherein determining the at least one instance center region of the first image based on the center region prediction result of each of the plurality of pixels comprises:~~

~~obtaining the at least one instance center region by performing connected component search processing on the first image based on the center region prediction result of each of the plurality of pixels.~~

65. The image processing method according to claim 34 or 45, wherein determining the instance center region corresponding to the first pixel from the at least one instance center region based on the center relative position prediction result and the position information of the first pixel comprises:

determining a center prediction position of the first pixel based on the position information of the first pixel and the center relative position prediction result of the first pixel, wherein the center prediction position indicates a predicted center position of an instance center region to which the first pixel belongs; and

10 determining the instance center region corresponding to the first pixel from the at least one instance center region based on the center prediction position of the first pixel and position information of the at least one instance center region.

76. The image processing method according to claim 56, wherein determining the instance center region corresponding to the first pixel from the at least one instance center region based on the center prediction position of the first pixel and the position information of the at least one instance center region comprises:

20 in response to the center prediction position of the first pixel belonging to a first instance center region in the at least one instance center region, determining the first instance center region as the instance center region corresponding to the first pixel; or

25 in response to the center prediction position of the first pixel not belonging to any instance center region in the at least one instance center region, determining, in the at least one instance center region, an instance center region closest to the center prediction position of the first pixel as the instance center region corresponding to the first pixel.

87. The image processing method according to any one of claims 34 to 67, wherein outputting~~obtaining~~ the prediction results of the plurality of pixels in the

first image by ~~inputting processing~~ the first image to the instance segmentation model for processing comprises:

obtaining respective center region prediction probabilities of the plurality of pixels in the first image by processing the first image; and

- 5 obtaining the center region prediction result of each of the plurality of pixels by performing binarization processing on the respective center region prediction probabilities of the plurality of pixels based on a first threshold.

98. An electronic device, comprising:

- 10 a predicting module, configured to ~~output~~obtain respective prediction results of a plurality of pixels in a first image by ~~inputting processing~~ the first image to an instance segmentation model for processing, each of the prediction results comprising a semantic prediction result, ~~and~~ a center relative position prediction result and a center region prediction result, wherein the semantic prediction result indicates that the pixel
- 15 is located in an instance region or in a background region, ~~and~~ the center relative position prediction result indicates a relative position between the pixel and an instance center, and the center region prediction result indicates whether the pixel is located in an instance center region; and

- a segmenting module comprising, ~~configured to determine an instance segmentation result of the first image based on the semantic prediction result and the center relative position prediction result of each of the plurality of pixels.~~
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~~10. The electronic device according to claim 9, wherein the segmenting module comprises:~~

- 25 a first unit, configured to determine at least one first pixel located in the instance region from the plurality of pixels based on the semantic prediction result of each of the plurality of pixels; wherein each of the prediction results further comprises position information of the first pixel; and

a second unit, configured to determine an instance to which each first pixel belongs

based on the center relative position prediction result, the position information and the center region prediction result of each first pixel.

~~11. An image processing method, comprising:~~

5 ~~obtaining N groups of instance segmentation output data, wherein the N groups of instance segmentation output data are instance segmentation output results obtained by processing an image by N instance segmentation models, respectively, the N groups of instance segmentation output data have different data structures, and N is an integer greater than 1;~~

10 ~~obtaining integrated semantic data and integrated center region data of the image based on the N groups of instance segmentation output data, wherein the integrated semantic data indicates a pixel located in an instance region in the image, and the integrated center region data indicates a pixel located in an instance center region in the image; and~~

15 ~~obtaining an instance segmentation result of the image based on the integrated semantic data and the integrated center region data of the image.~~

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~~12. The image processing method according to claim 11, wherein obtaining the integrated semantic data and the integrated center region data of the image~~
20 ~~based on the N groups of instance segmentation output data comprises:~~

~~obtaining, for each of the N instance segmentation models, semantic data and center region data of the instance segmentation model based on the instance segmentation output data of the instance segmentation model; and~~

~~obtaining the integrated semantic data and the integrated center region data~~
25 ~~of the image based on the semantic data and the center region data of each of the N instance segmentation models.—~~

~~13. The image processing method according to claim 12, wherein obtaining the semantic data and the center region data of the instance segmentation model~~

based on the instance segmentation output data of the instance segmentation model comprises:

determining instance identification information corresponding to each of a plurality of pixels in the image in the instance segmentation model based on the instance segmentation output data of the instance segmentation model; and

obtaining a semantic prediction value of each of the plurality of pixels in the instance segmentation model based on the instance identification information corresponding to each of the plurality of pixels in the instance segmentation model, wherein the semantic data of the instance segmentation model comprises the semantic prediction value of each of the plurality of pixels in the image.—

14. The image processing method according to claim 12 or 13, wherein obtaining the semantic data and the center region data of the instance segmentation model based on the instance segmentation output data of the instance segmentation model further comprises:

determining, in the instance segmentation model, at least two pixels located in the instance region in the image based on the instance segmentation output data of the instance segmentation model;

determining an instance center position of the instance segmentation model based on position information of the at least two pixels located in the instance region in the instance segmentation model; and

determining an instance center region of the instance segmentation model based on the instance center position of the instance segmentation model and the position information of the at least two pixels.—

15. The image processing method according to claim 14, wherein

before determining, in the instance segmentation model, the at least two pixels located in the instance region in the image based on the instance segmentation output data of the instance segmentation model, the method further comprises:—

~~obtaining eroded data of the instance segmentation model by performing erosion processing on the instance segmentation output data of the instance segmentation model; and~~

5 ~~determining, in the instance segmentation model, the at least two pixels located in the instance region in the image based on the instance segmentation output data of the instance segmentation model comprises:~~

~~determining, in the instance segmentation model, the at least two pixels located in the instance region in the image based on the eroded data of the instance segmentation model.—~~

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~~16. The image processing method according to claim 14 or 15, wherein determining the instance center position of the instance segmentation model based on the position information of the at least two pixels located in the instance region in the instance segmentation model comprises:~~

15 ~~taking an average value of the positions of the at least two pixels located in the instance region as the instance center position of the instance segmentation model.—~~

20 ~~17. The image processing method according to any one of claims 14 to 16, wherein determining the instance center region of the instance segmentation model based on the instance center position of the instance segmentation model and the position information of the at least two pixels comprises:~~

25 ~~determining a maximum distance among the at least two pixels and the instance center position based on the instance center position of the instance segmentation model and the position information of the at least two pixels;~~

~~determining a first threshold based on the maximum distance; and~~

~~determining a pixel in the at least two pixels which has a distance from the instance center position being less than or equal to the first threshold as a pixel in the instance center region.—~~

~~18. An electronic device, comprising:~~

~~an obtaining module, configured to obtain N groups of instance segmentation output data, wherein the N groups of instance segmentation output data are instance segmentation output results obtained by processing an image by N instance segmentation models, respectively, the N groups of instance segmentation output data have different data structures, and N is an integer greater than 1;~~

~~a converting module, configured to obtain integrated semantic data and integrated center region data of the image based on the N groups of instance segmentation output data, wherein the integrated semantic data indicates a pixel located in an instance region in the image, and the integrated center region data indicates a pixel located in an instance center region in the image; and~~

~~a segmenting module, configured to obtain an instance segmentation result of the image based on the integrated semantic data and the integrated center region data of the image.~~

19. An electronic device, comprising a processor and a memory, wherein the memory is configured to store a computer program, the computer program is configured to be executed by the processor, and the processor is configured to perform the method according to any one of claims 1 to ~~78 and 11 to 18~~.

~~20~~ 20. A computer-readable storage medium, configured to store a computer program, wherein the computer program causes a computer to execute the method according to any one of claims 1 to ~~78 and 11 to 18~~.