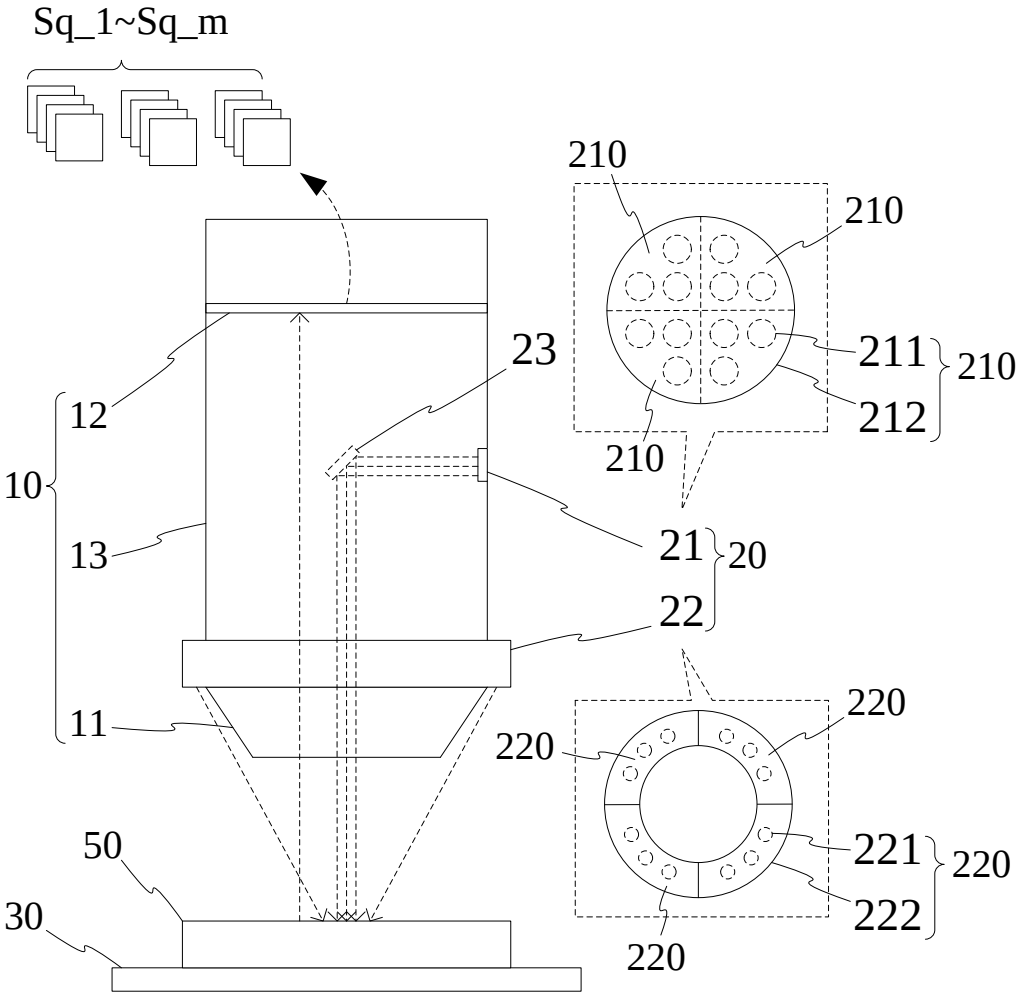

Sq_1~Sq_m
210
210
211
210
212
210
23
12
10
13
21
20
22
11
220
220
221
220
222
220
50
30

FIG. 1

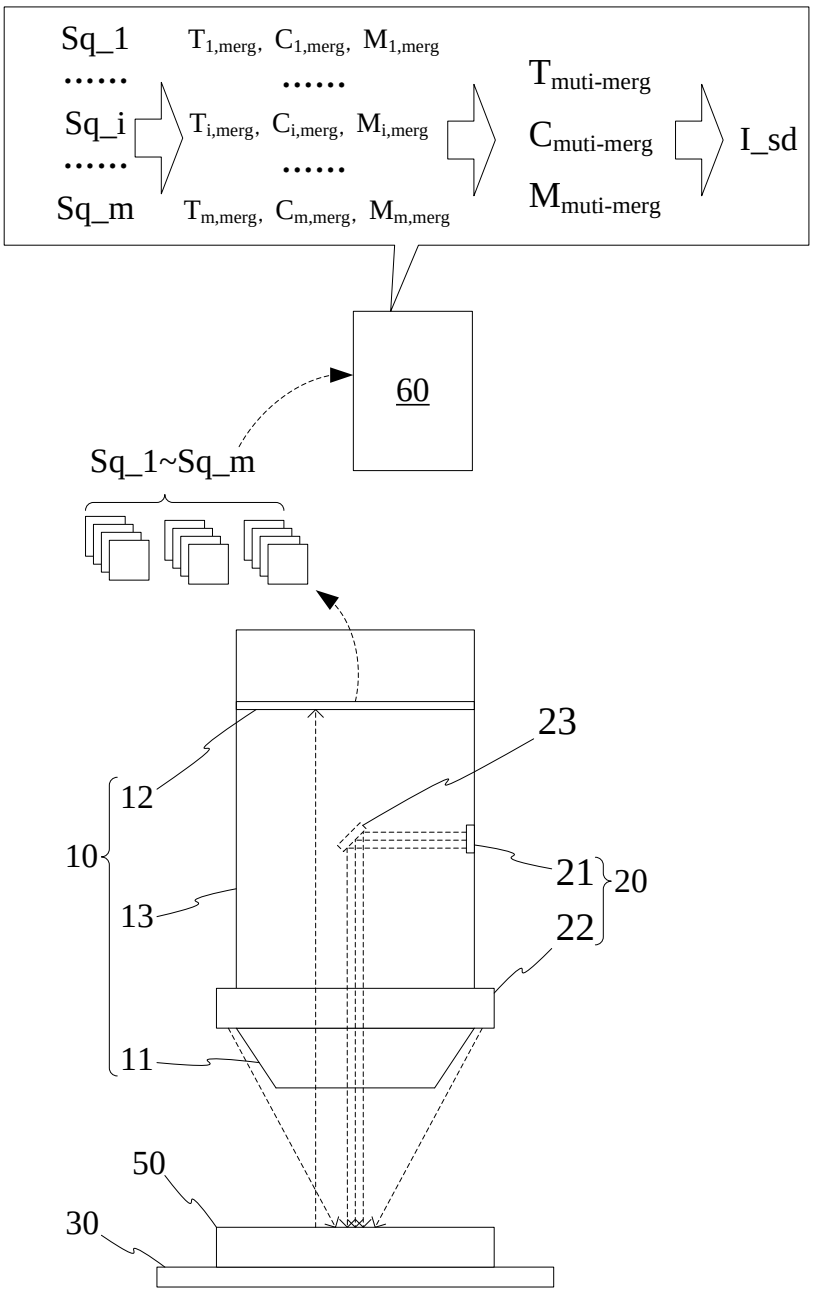

Sq_1
Sq_i
Sq_m
$T_{1,merg}$, $C_{1,merg}$, $M_{1,merg}$
$T_{i,merg}$, $C_{i,merg}$, $M_{i,merg}$
$T_{m,merg}$, $C_{m,merg}$, $M_{m,merg}$
$T_{muti-merg}$
$C_{muti-merg}$
$M_{muti-merg}$
I_sd
60
Sq_1~Sq_m
23
12
10
21
20
13
22
11
50
30

FIG. 2

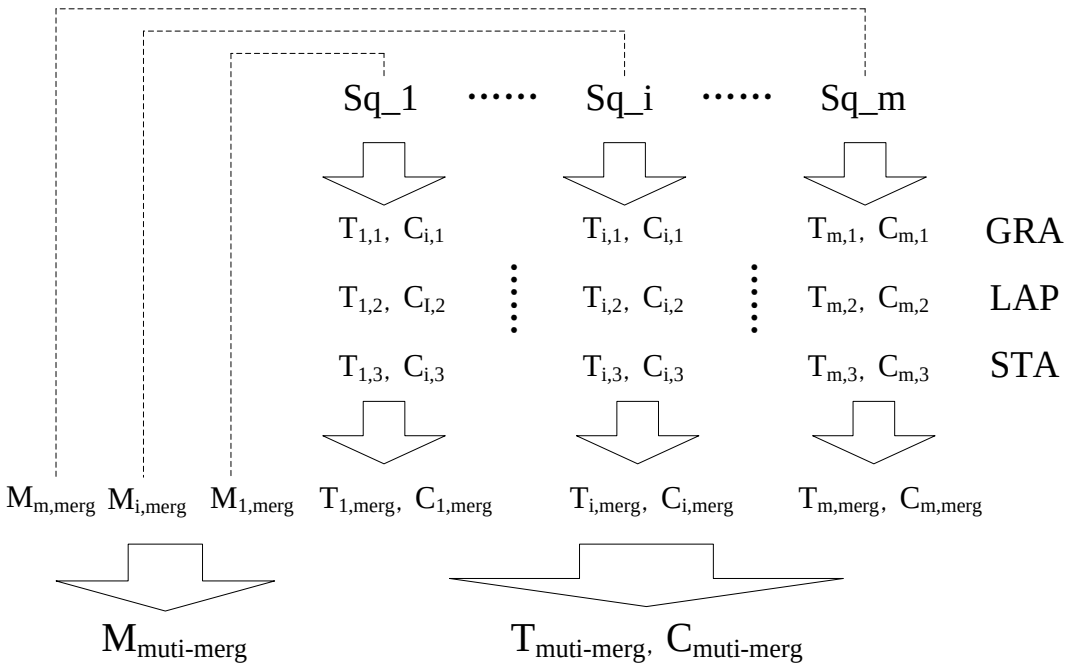

Sq_1
Sq_i
Sq_m
$T_{1,1}$, $C_{i,1}$
$T_{i,1}$, $C_{i,1}$
$T_{m,1}$, $C_{m,1}$
GRA
$T_{1,2}$, $C_{I,2}$
$T_{i,2}$, $C_{i,2}$
$T_{m,2}$, $C_{m,2}$
LAP
$T_{1,3}$, $C_{i,3}$
$T_{i,3}$, $C_{i,3}$
$T_{m,3}$, $C_{m,3}$
STA
$M_{m,merg}$ $M_{i,merg}$ $M_{1,merg}$
$T_{1,merg}$, $C_{1,merg}$
$T_{i,merg}$, $C_{i,merg}$
$T_{m,merg}$, $C_{m,merg}$
$M_{muti\text{-}merg}$
$T_{muti\text{-}merg}$, $C_{muti\text{-}merg}$

FIG. 3

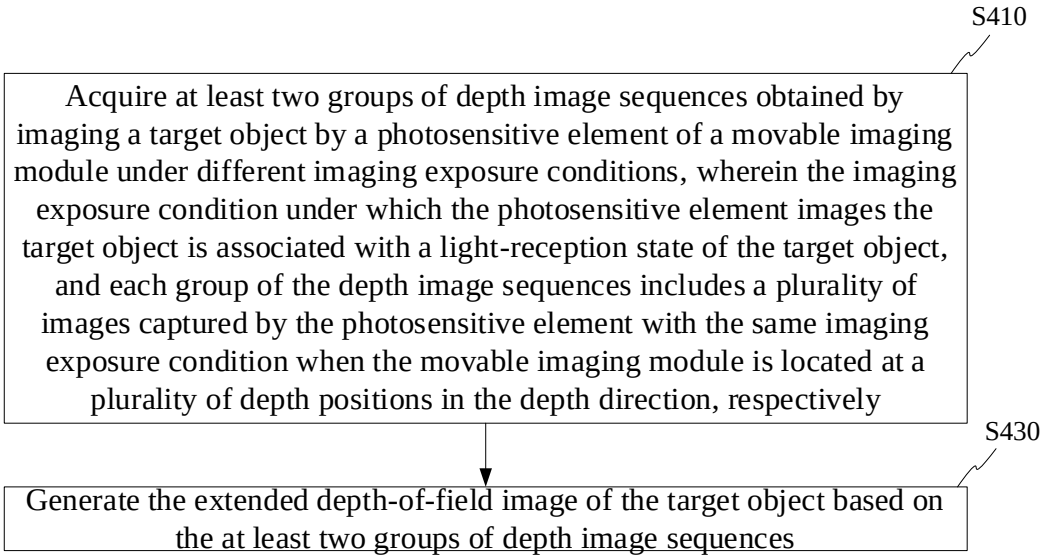

S410
Acquire at least two groups of depth image sequences obtained by imaging a target object by a photosensitive element of a movable imaging module under different imaging exposure conditions, wherein the imaging exposure condition under which the photosensitive element images the target object is associated with a light-reception state of the target object, and each group of the depth image sequences includes a plurality of images captured by the photosensitive element with the same imaging exposure condition when the movable imaging module is located at a plurality of depth positions in the depth direction, respectively
S430
Generate the extended depth-of-field image of the target object based on the at least two groups of depth image sequences

FIG. 4

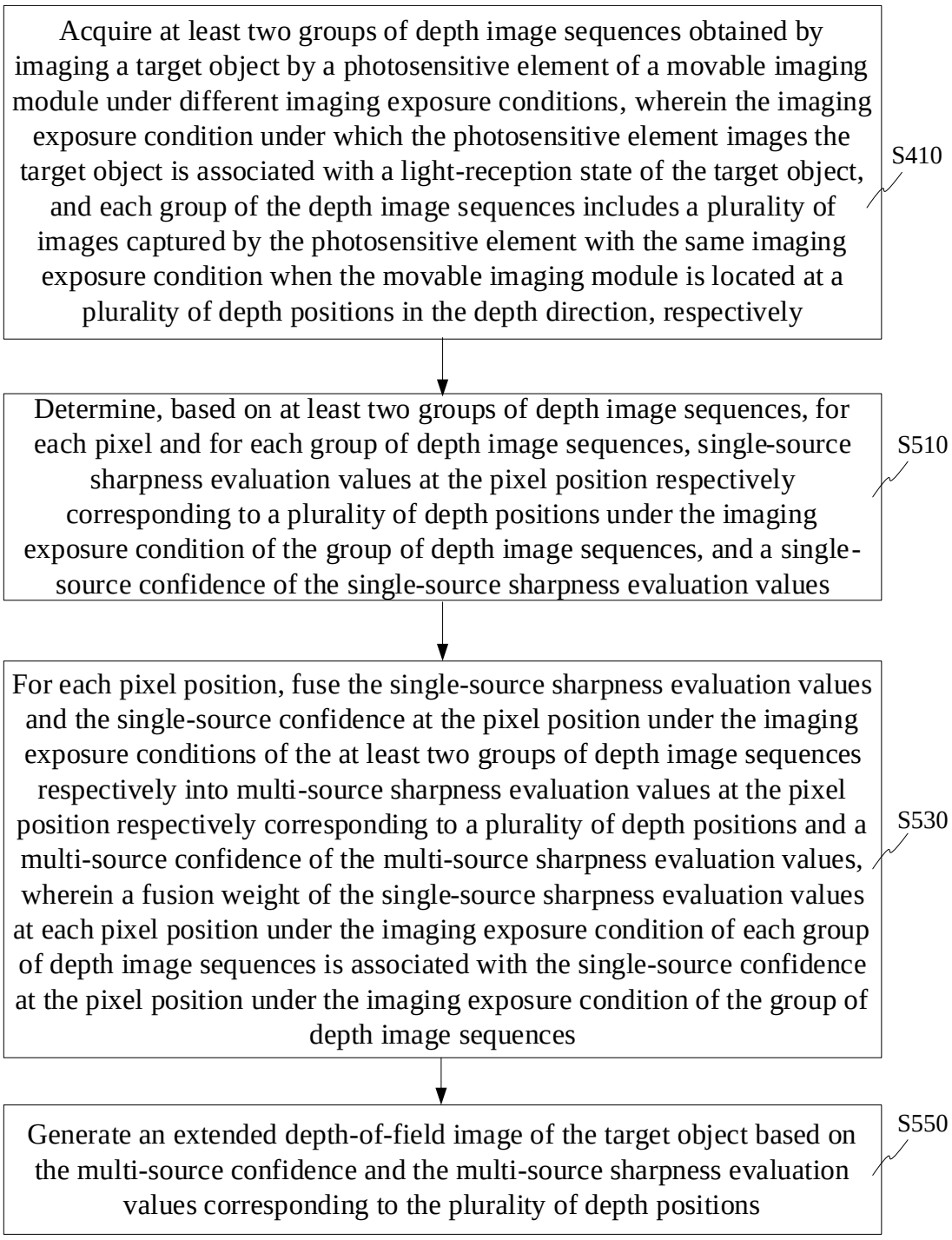

Acquire at least two groups of depth image sequences obtained by imaging a target object by a photosensitive element of a movable imaging module under different imaging exposure conditions, wherein the imaging exposure condition under which the photosensitive element images the target object is associated with a light-reception state of the target object, and each group of the depth image sequences includes a plurality of images captured by the photosensitive element with the same imaging exposure condition when the movable imaging module is located at a plurality of depth positions in the depth direction, respectively
S410
Determine, based on at least two groups of depth image sequences, for each pixel and for each group of depth image sequences, single-source sharpness evaluation values at the pixel position respectively corresponding to a plurality of depth positions under the imaging exposure condition of the group of depth image sequences, and a single-source confidence of the single-source sharpness evaluation values
S510
For each pixel position, fuse the single-source sharpness evaluation values and the single-source confidence at the pixel position under the imaging exposure conditions of the at least two groups of depth image sequences respectively into multi-source sharpness evaluation values at the pixel position respectively corresponding to a plurality of depth positions and a multi-source confidence of the multi-source sharpness evaluation values, wherein a fusion weight of the single-source sharpness evaluation values at each pixel position under the imaging exposure condition of each group of depth image sequences is associated with the single-source confidence at the pixel position under the imaging exposure condition of the group of depth image sequences
S530
Generate an extended depth-of-field image of the target object based on the multi-source confidence and the multi-source sharpness evaluation values corresponding to the plurality of depth positions
S550

FIG. 5

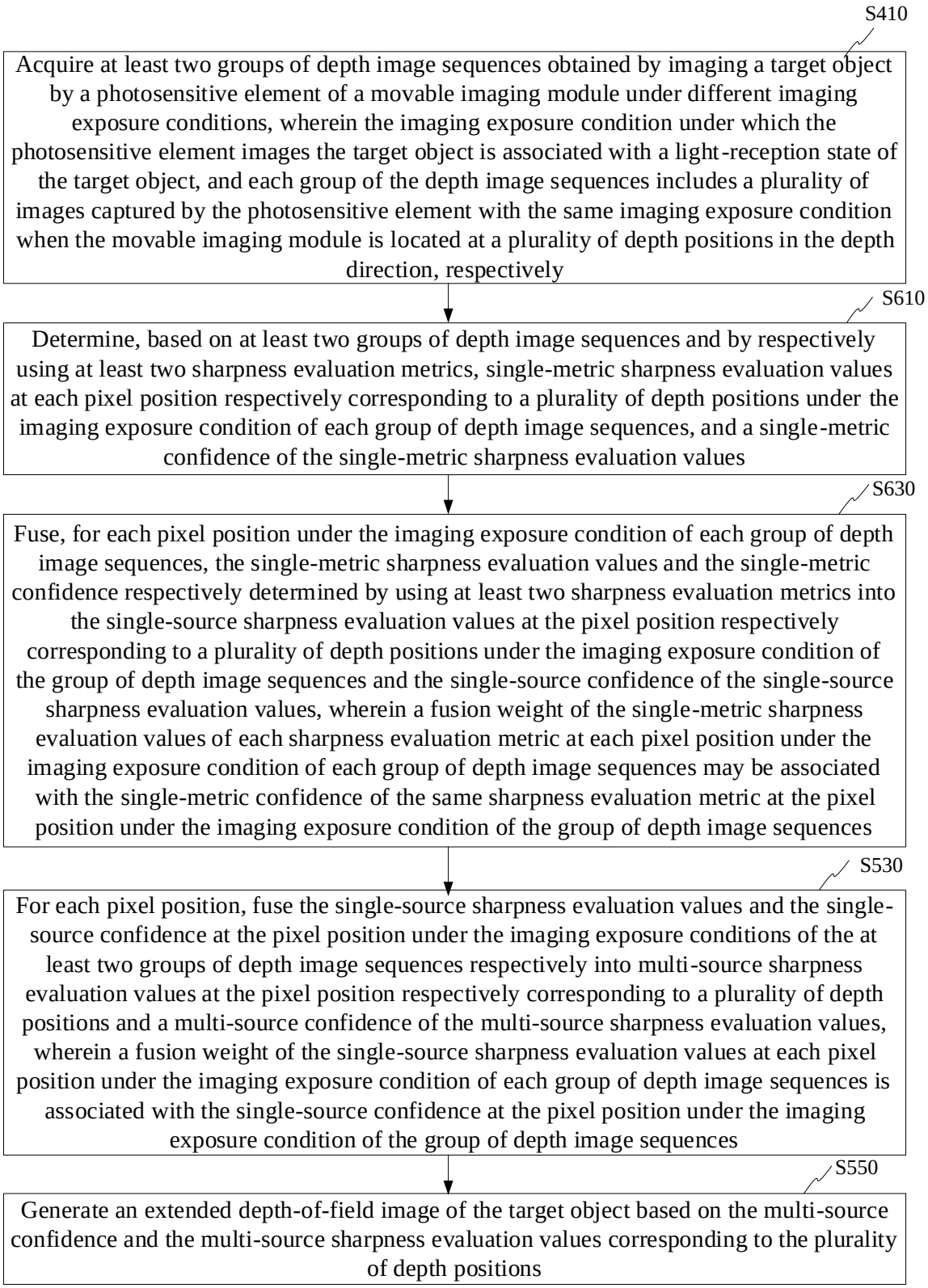

S410
Acquire at least two groups of depth image sequences obtained by imaging a target object by a photosensitive element of a movable imaging module under different imaging exposure conditions, wherein the imaging exposure condition under which the photosensitive element images the target object is associated with a light-reception state of the target object, and each group of the depth image sequences includes a plurality of images captured by the photosensitive element with the same imaging exposure condition when the movable imaging module is located at a plurality of depth positions in the depth direction, respectively
S610
Determine, based on at least two groups of depth image sequences and by respectively using at least two sharpness evaluation metrics, single-metric sharpness evaluation values at each pixel position respectively corresponding to a plurality of depth positions under the imaging exposure condition of each group of depth image sequences, and a single-metric confidence of the single-metric sharpness evaluation values
S630
Fuse, for each pixel position under the imaging exposure condition of each group of depth image sequences, the single-metric sharpness evaluation values and the single-metric confidence respectively determined by using at least two sharpness evaluation metrics into the single-source sharpness evaluation values at the pixel position respectively corresponding to a plurality of depth positions under the imaging exposure condition of the group of depth image sequences and the single-source confidence of the single-source sharpness evaluation values, wherein a fusion weight of the single-metric sharpness evaluation values of each sharpness evaluation metric at each pixel position under the imaging exposure condition of each group of depth image sequences may be associated with the single-metric confidence of the same sharpness evaluation metric at the pixel position under the imaging exposure condition of the group of depth image sequences
S530
For each pixel position, fuse the single-source sharpness evaluation values and the single-source confidence at the pixel position under the imaging exposure conditions of the at least two groups of depth image sequences respectively into multi-source sharpness evaluation values at the pixel position respectively corresponding to a plurality of depth positions and a multi-source confidence of the multi-source sharpness evaluation values, wherein a fusion weight of the single-source sharpness evaluation values at each pixel position under the imaging exposure condition of each group of depth image sequences is associated with the single-source confidence at the pixel position under the imaging exposure condition of the group of depth image sequences
S550
Generate an extended depth-of-field image of the target object based on the multi-source confidence and the multi-source sharpness evaluation values corresponding to the plurality of depth positions

FIG. 6

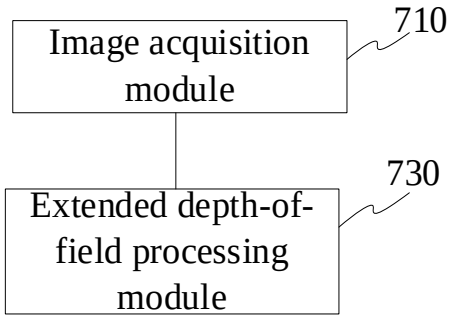

Image acquisition module
710
Extended depth-of-field processing module
730

FIG. 7