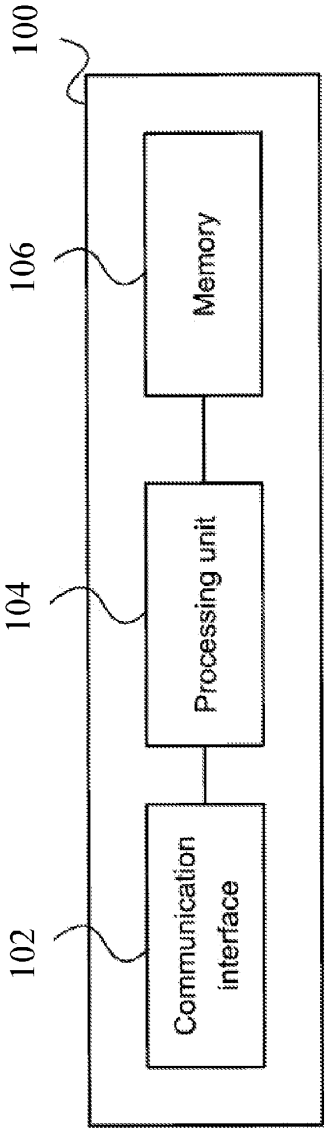

100
106
Memory
104
Processing unit
102
Communication interface

FIG. 1A

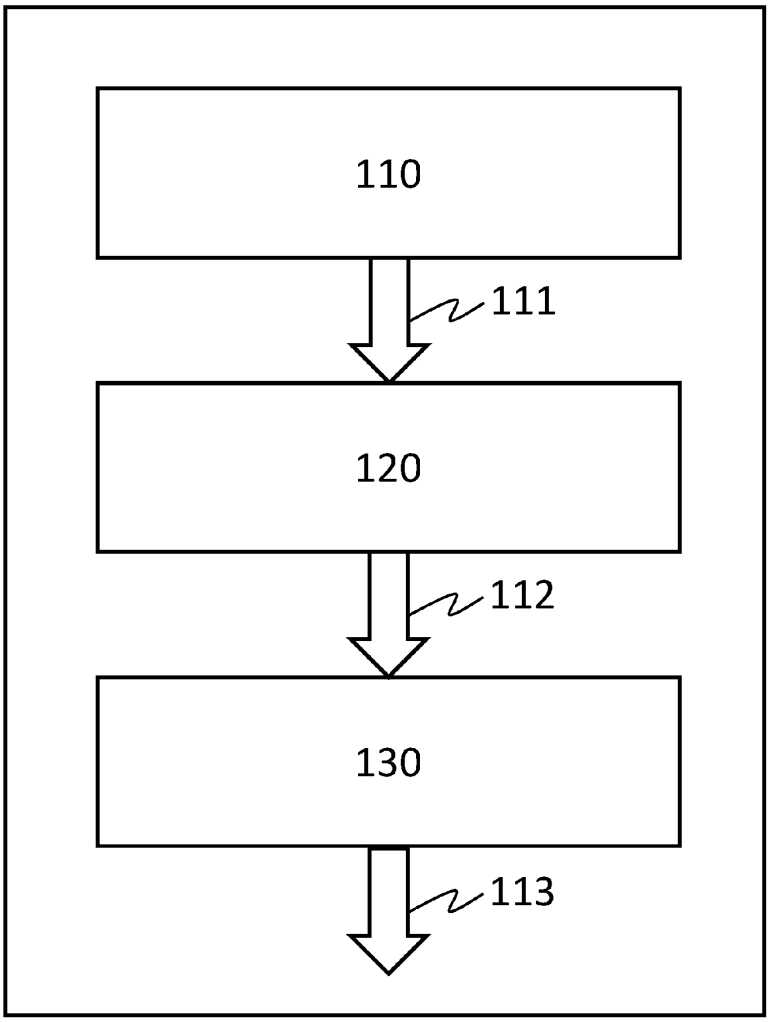


FIG. 1B

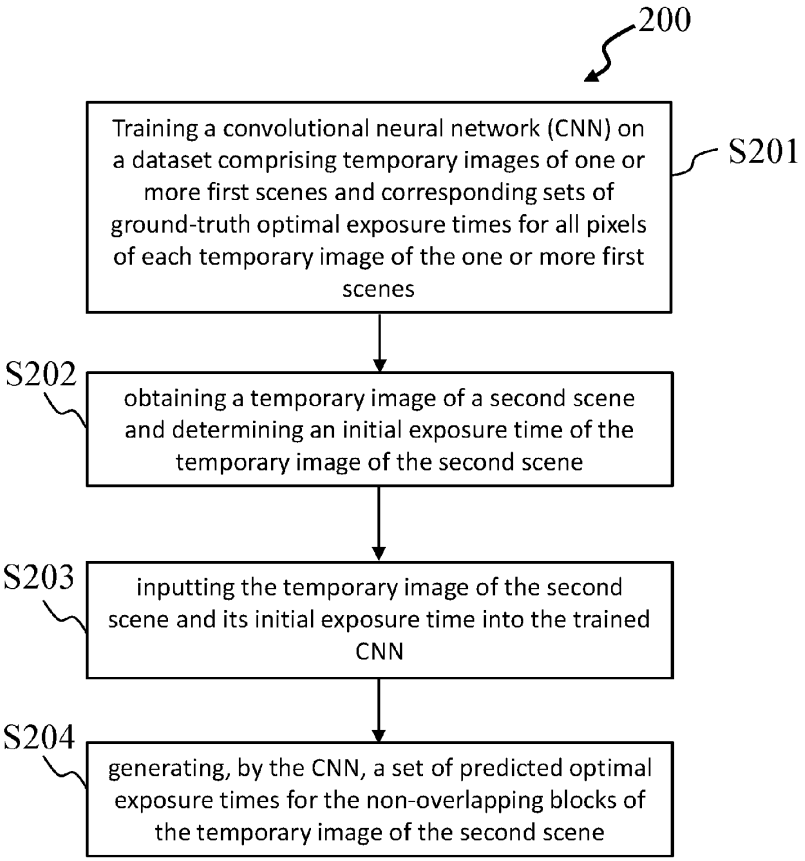

200
Training a convolutional neural network (CNN) on a dataset comprising temporary images of one or more first scenes and corresponding sets of ground-truth optimal exposure times for all pixels of each temporary image of the one or more first scenes
S201
S202
obtaining a temporary image of a second scene and determining an initial exposure time of the temporary image of the second scene
S203
inputting the temporary image of the second scene and its initial exposure time into the trained CNN
S204
generating, by the CNN, a set of predicted optimal exposure times for the non-overlapping blocks of the temporary image of the second scene

FIG. 2

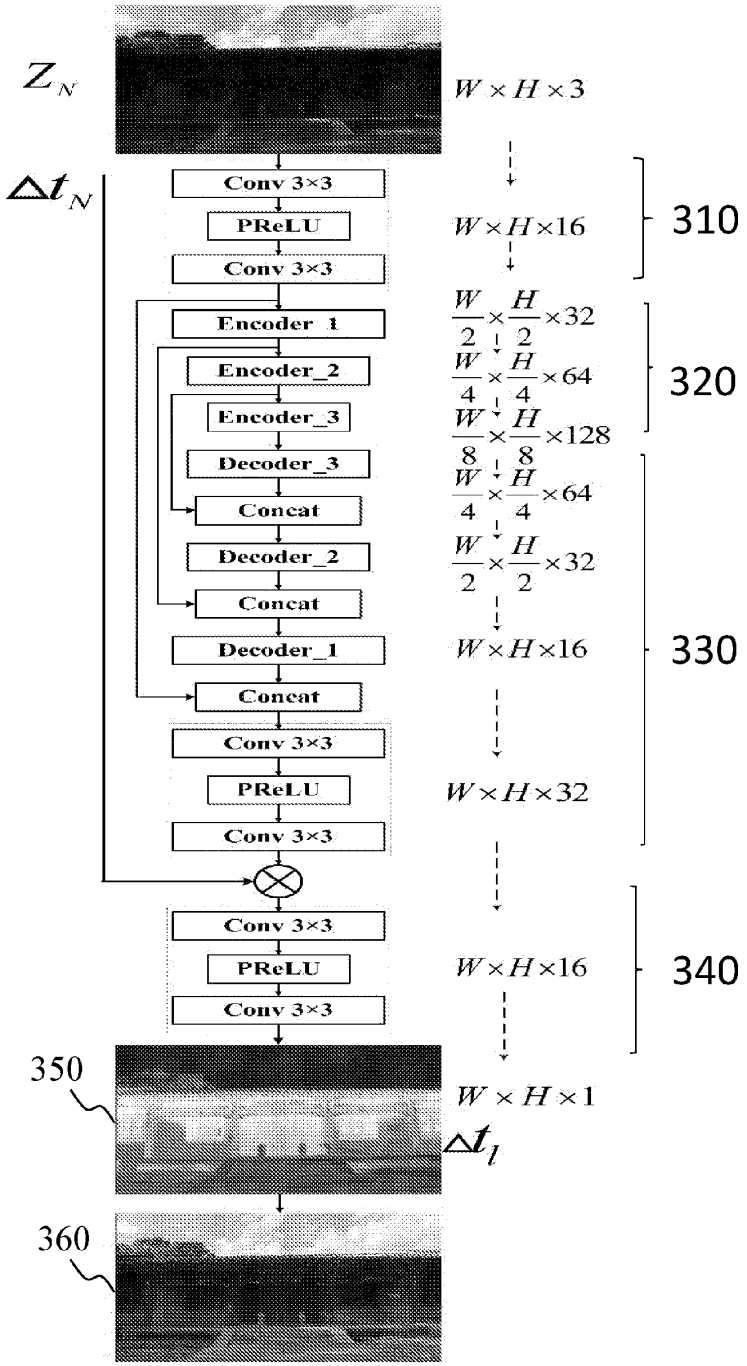

Z_N
$W \times H \times 3$
Δt_N
Conv 3×3
PReLU
Conv 3×3
$W \times H \times 16$
310
Encoder_1
Encoder_2
Encoder_3
$\frac{W}{2} \times \frac{H}{2} \times 32$
$\frac{W}{4} \times \frac{H}{4} \times 64$
$\frac{W}{8} \times \frac{H}{8} \times 128$
320
Decoder_3
Concat
Decoder_2
Concat
Decoder_1
Concat
$\frac{W}{4} \times \frac{H}{4} \times 64$
$\frac{W}{2} \times \frac{H}{2} \times 32$
$W \times H \times 16$
330
Conv 3×3
PReLU
Conv 3×3
$W \times H \times 32$
Conv 3×3
PReLU
Conv 3×3
$W \times H \times 16$
340
350
$W \times H \times 1$
Δt_1
360

FIG. 3

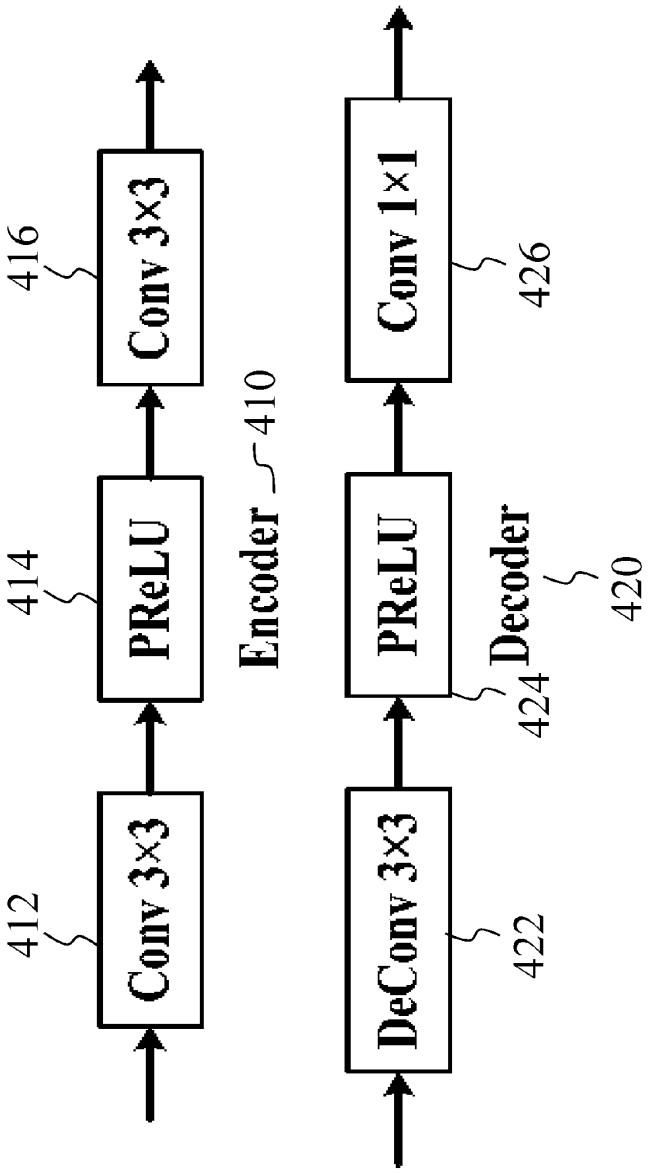

Conv 3×3
412
PReLU
414
Conv 3×3
416
Encoder
410
DeConv 3×3
422
PReLU
424
Conv 1×1
426
Decoder
420

FIG. 4