CLAIMS

1. An illuminance estimation model generation~~information processing~~ device comprising:

a memory~~retaining unit~~ that stores~~retains~~ a basic model indicating a plurality of relations for a plurality of subject conditions between a plurality of illuminances and a plurality of luminance of a plurality of captured images, which are obtained when a subject is imaged by changing an illuminance condition under the subject conditions;

a processor configured to:

~~a reference image acquiring unit that~~ acquire~~s~~ a captured image captured in a target space for illuminance estimation as a reference image;

~~a reference illuminance acquiring unit that~~ acquire~~s~~ illuminance of the target space at a time of imaging the reference image as reference illuminance; ~~and~~

~~an illuminance estimation model generating unit that~~ generate~~s~~ an illuminance estimation model indicating a relation between illuminance and luminance in the target space from a data value indicated as a pair of the reference illuminance and luminance of the reference image based on the basic model; and

compare the reference image which is previously acquired and an image newly captured in the target space to newly acquire the newly captured image as the reference image, when a difference between the previously acquired reference image and the newly captured image is greater than a predetermined threshold value.

2. The illuminance estimation model generation~~information processing~~ device according to claim 1, the processor further configured to~~comprising~~:

~~a basic model generating unit that~~ generate~~s~~ the basic model,

wherein the memory~~retaining unit~~ store~~sretains~~ the basic model generated by the processor~~basic model generating unit~~.

3. The illuminance estimation model generation~~information processing~~ device according to claim 2, wherein the processor is further configured to~~basic model generating unit~~ calculate~~s~~ a plurality of regression expressions of the plurality of illuminances and the luminance of the captured images for the subject conditions to generate the regression expressions as the basic model.

4. The illuminance estimation model generation~~information processing~~ device according to ~~any one of~~ claim~~s~~ 1~~ to 3~~,

wherein the processor is further configured to~~illuminance estimation model generating unit~~ generate~~s~~ the illuminance estimation model by performing linear interpolation on the data value indicated as the pair of the reference illuminance and the luminance of the reference image using the basic model.

5. The illuminance estimation model generation~~information processing~~ device according to ~~any one of~~ claim~~s~~ 1~~ to 4~~,

wherein the processor is further configured to~~illuminance estimation model generating unit~~ acquire~~s~~ the luminance from one or a plurality of areas included in the reference image to generate the illuminance estimation

model for each of the areas.

6. The illuminance estimation model generation~~information processing~~ device according to claim 5, wherein the processor is further configured to~~illuminance estimation model generating unit~~ specify~~ies~~ an area illuminated by a lighting device provided in the target space from the reference image to generate the illuminance estimation model based on luminance acquired from the specified area.

~~7. The information processing device according to any one of claims 1 to 6,~~

~~wherein the reference image acquiring unit compares the reference image which is previously acquired and a image newly captured in the target space to newly acquire the newly captured image as the reference image, when a difference between the previously acquired reference image and the newly captured image is greater than a predetermined threshold value.~~

7~~8~~. An image sensor device comprising:

a memory~~retaining unit~~ that stores~~retains~~ an illuminance estimation model generated by an~~the~~ information processor~~ing device according to any one of claims 1 to 7~~;

a processor configured to:

~~an acquiring unit that~~ acquire~~s~~ a captured image captured in a~~the~~ target space for illuminance estimation; and

~~a deriving unit that~~ derive~~s~~ illuminance corresponding to luminance of the captured image based on the illuminance estimation model,

wherein the information processor comprising:

a specific memory that stores a basic model

indicating a plurality of relations for a plurality of subject conditions between a plurality of illuminances and a plurality of luminance of a plurality of captured images, which are obtained when a subject is imaged by changing an illuminance condition under the subject conditions;

the information processor configured to:

acquire a captured image captured in the target space for illuminance estimation as a reference image;

acquire illuminance of the target space at a time of imaging the reference image as reference illuminance; and

generate an illuminance estimation model indicating a relation between illuminance and luminance in the target space from a data value indicated as a pair of the reference illuminance and luminance of the reference image based on the basic model, wherein

the memory stores the illuminance estimation model in correspondence with a predetermined area in the captured image, and

the processor is further configured to acquire luminance from each area in the captured image which corresponds to the illuminance estimation model to derive illuminance using the illuminance estimation model corresponding to the each area.

8~~9~~. The image sensor device according to claim 7~~8~~,

wherein the processor is further configured to~~deriving unit~~ excludes~~s~~ an area in which a moving body or a local light source is present from the captured image to acquire

the luminance from the captured image from which the area is removed.

9~~10~~. The image sensor device according to claim 7~~8 or 9~~, wherein the processor is further configured to~~deriving unit~~ specify~~ies~~ a static area in which a change is small from the captured images to acquire the luminance from the static area.

~~11. The image sensor device according to any one of claims 8 to 10, wherein~~

~~the retaining unit retains the illuminance estimation model in correspondence with a predetermined area in the captured image, and~~

~~the deriving unit acquires luminance from each area in the captured image which corresponds to the illuminance estimation model to derive illuminance using the illuminance estimation model corresponding to the each area.~~

10~~12~~. The image sensor device according to ~~any one of~~ claim~~s~~ 7~~8 to 11~~, further comprising:

an output ~~unit~~ that outputs the illuminance derived by the processor~~deriving unit~~ or a value according to a degree of the illuminance.

11~~13~~. A ~~computer program product having a~~ non-transitory computer readable medium including computer programmed instructions, wherein the instructions, when executed by a computer, cause the computer to perform:

retaining a basic model indicating a plurality of relations for a plurality of subject conditions between a plurality of illuminances and a plurality of luminance of a

plurality of captured images, which are obtained when a subject is imaged by changing an illuminance conditions under the subject conditions;

acquiring illuminance of the target space at a time of imaging the reference image as reference illuminance;

acquiring illuminance of the target space at a time of imaging the reference image as reference illuminance; and

generating an illuminance estimation model indicating a relation between illuminance and luminance in the target space from a data value indicated as a pair of the reference illuminance and luminance of the reference image based on the basic model.