method for estimating x based on visible and infrared has been presented above. The estimate of x may be stored in intermediate image **1234**. For each x, the gain is calculated in function block **1236** using the function heretofore taught, and the result stored in the corresponding pixel of the gain image **1238**. Then, the defect details in image **1216** are multiplied pixel by corresponding pixel with the gain image **1238** at multiplier **1240** to produce corresponding pixels of the corrector image **1242**. The corrector image **1242** contains zeroes at points **1244** with no defect present, has negative values at points **1246** were a defect is present and the visible image is light, and has positive values at points **1248** were a defect is present and the visible image is nearly black, below dust gray. Finally, the corrector image **1242** is subtracted from the input image **1202** to generate the corrected image **1250** substantially free of defects.

Whereas the present invention has been described with respect to specific embodiments thereof, it will be understood that various changes and modifications will be suggested to one skilled in the art and it is intended to encompass such changes and modifications as fall within the scope of appended claims.

I claim:

1. A method for removing the effect of surface defects from a scan of an image behind a surface, comprising:

receiving visible light from the image to form a visible light image,

receiving infrared light from the image to form an infrared light image,

distinguishing the effect of a surface defect on the infrared light image,

multiplying the effect by a first function of the magnitude of visible light to produce a product, and

removing the product from the visible light image.

2. The method of claim **1** wherein the visible light from the image is light reflected from the image.

3. The method of claim **2** wherein the magnitude of visible light is the magnitude of visible light within a region of the image.

4. The method of claim **3** wherein the first function of the magnitude of visible light increases with increasing magnitude of visible light.

5. The method of claim **3** wherein the first function of the magnitude of visible light is negative for a small magnitude of visible light.

6. The method of claim **3** wherein the first function of the magnitude of visible light is unity for a magnitude of visible light representing a white image.

7. The method of claim **1** wherein distinguishing the effect of a surface defect on the infrared light image further comprise: subtracting from the infrared light image a magnitude corresponding to the magnitude of the infrared light image in a region with no surface defect.

8. The method of claim **1** wherein distinguishing the effect of a surface defect on the infrared light image further comprises: isolating the effect of a surface defect in the spatial frequency domain.

9. The method of claim **8** wherein isolating the effect of a surface defect further comprises operating on a portion of the infrared light image with a discrete cosine transform.

10. The method of claim **8** wherein isolating the effect of a surface defect further comprises the step of isolating the angle of a surface defect.

11. The method of claim **10** wherein isolating the effect of a surface defect further comprises operating on a portion of the infrared light image with a discrete Fourier transform.

12. The method of claim **1** wherein the first function of the magnitude of visible light is of the form −K+visible(1+K), where K is a constant greater than zero and less than one.

13. The method of claim **1** wherein the first function of the magnitude of visible light is also a function of the magnitude of infrared light.

14. The method of claim **13** wherein the first function of the magnitudes of visible and infrared light is of the form −K+x(1+K), where K is a constant greater than zero and less than one, and x is a function of the magnitudes of visible and infrared light of the form G+(visible−G)(1−SG)/(infrared−SG) where G is dust gray, and S is a constant that is unity or less.

15. A method for removing the effects of surface defects from a scan of an image behind a surface, comprising:

receiving visible light from the image to form a visible light image,

receiving infrared light from the image to form an infrared light image,

distinguishing the effect of a surface defect on the infrared light image,

multiplying the effect by an upper bound function of the magnitude of visible light to produce an upper bound product,

multiplying the effect by a lower bound function of the magnitude of visible light that is less than the upper bound function to produce a lower bound product, and

removing a mix of the upper bound product and lower bound product from the visible light image.

16. The method of claim **15** wherein the lower bound function of the magnitude of visible light increases with increasing magnitude of visible light.

17. The method of claim **16** wherein the lower bound function of the magnitude of visible light is negative for a small magnitude of visible light.

18. The method of claim **16** wherein the difference between the upper and lower bound functions of visible light increases for smaller magnitudes of visible light.

19. The method of claim **16** wherein removing a mix further comprises selecting a mix that will maximize removal of the effect of the defect from the visible light image.

20. The method of claim **16** wherein removing a mix further comprises removing either the upper bound product or the lower bound product so as to maximize removal of the effect of the defect from the visible light image.

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