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Sodini et al.

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(54) **SYSTEM AND METHOD FOR PROCESSING
NON-LINEAR IMAGE DATA FROM A
DIGITAL IMAGER**

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patent is extended or adjusted under 35
U.S.C. 154(b) by 931 days.

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Related U.S. Application Data

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11, 2002.

(51) **Int. Cl.**
G06K 9/00 (2006.01)

(52) **U.S. Cl.** **382/168**; 345/589

(58) **Field of Classification Search** 382/168-172,
382/312, 321; 345/589-605
See application file for complete search history.

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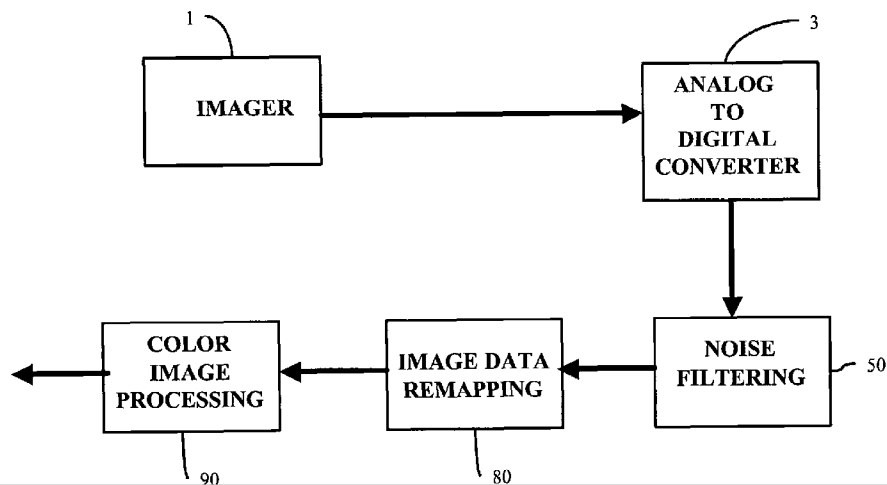
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(57) **ABSTRACT**

A system and method process non-linear image data, still or
video, from a digital imager. Noise generated by analog-to-
digital converters is filtered from a pixel of digital image
data. Moreover, the effects of single pixel defects in the
imager are eliminated by clamping a predetermined pixel of
image data within the window when the value of the
predetermined pixel is greater than a maximum value of the
image data of neighboring pixels or less than a minimum
value of the image data of neighboring pixels. Ripples in
image data are reduced by eliminating the effects of single
pixel defects before filtering for crosstalk caused by elec-
trical crosstalk between sensor elements in an imager. Dark
current is removed from image data generated by an imager
by subtracting a fraction of a determined dark current value
from all image data generated by the imager to compensate
for nonlinearities in dark current across the imager. The
image data is white balanced by creating a set of scalar color
adjustments from determined average color values and con-
straining the set of scalar adjustments to plausible lighting
conditions to prevent overcompensation on images having
large regions of similar hue. Lastly, utilization of a fixed set
of intensity levels is optimized by remapping and restrech-
ing the image data to create new luma values for each pixel.

13 Claims, 10 Drawing Sheets



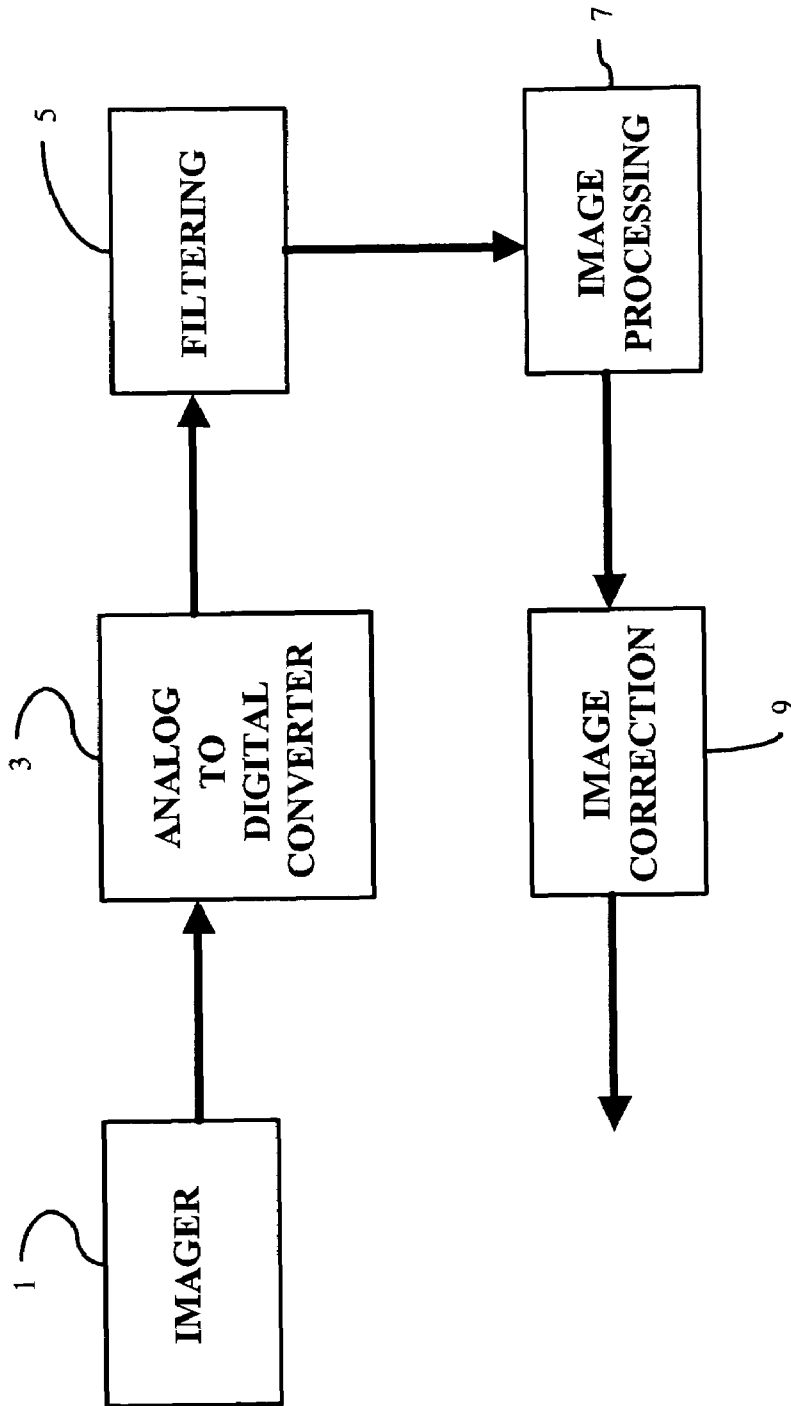


FIGURE 1 (Prior Art)

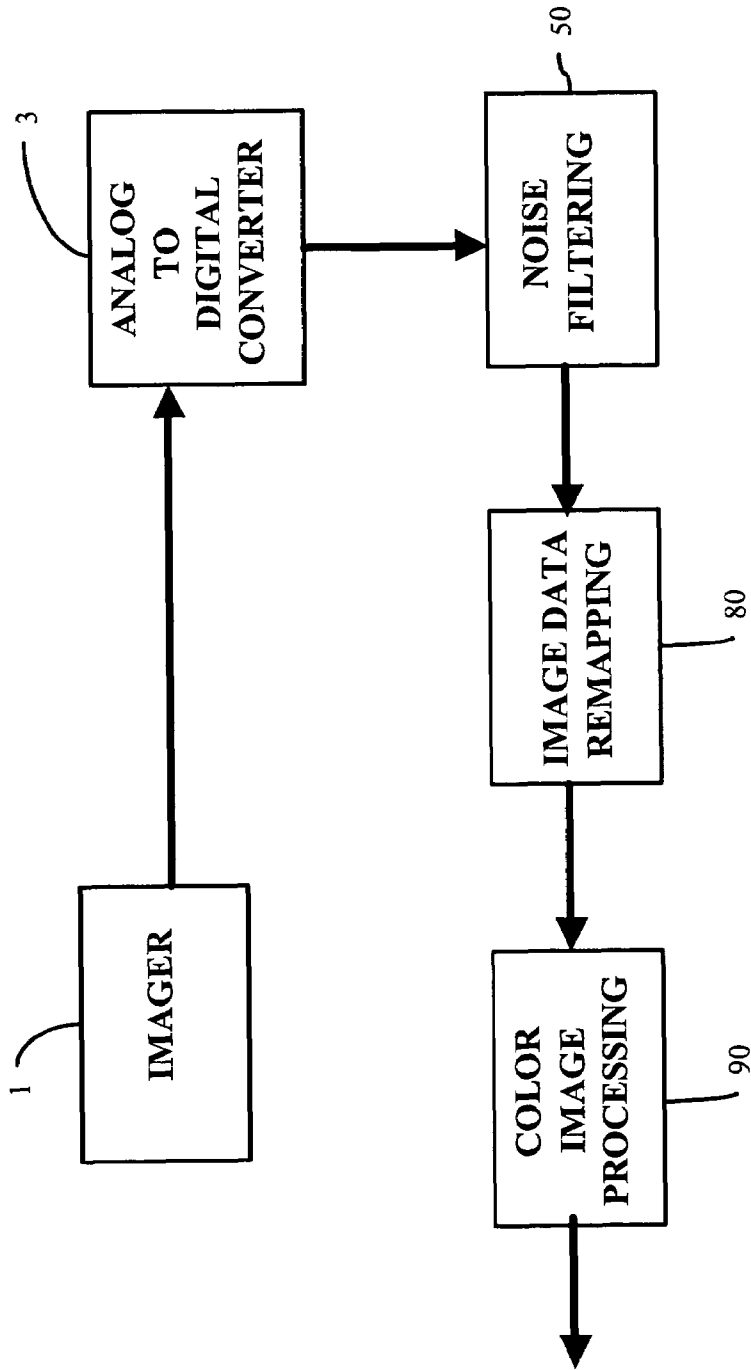


FIGURE 2

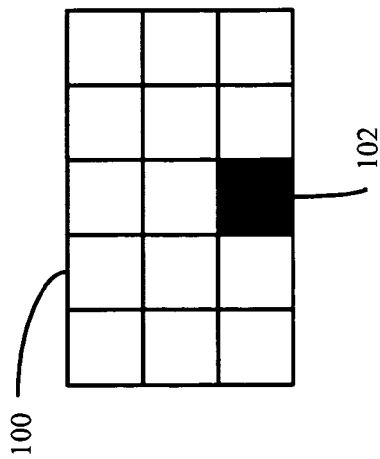


FIGURE 3

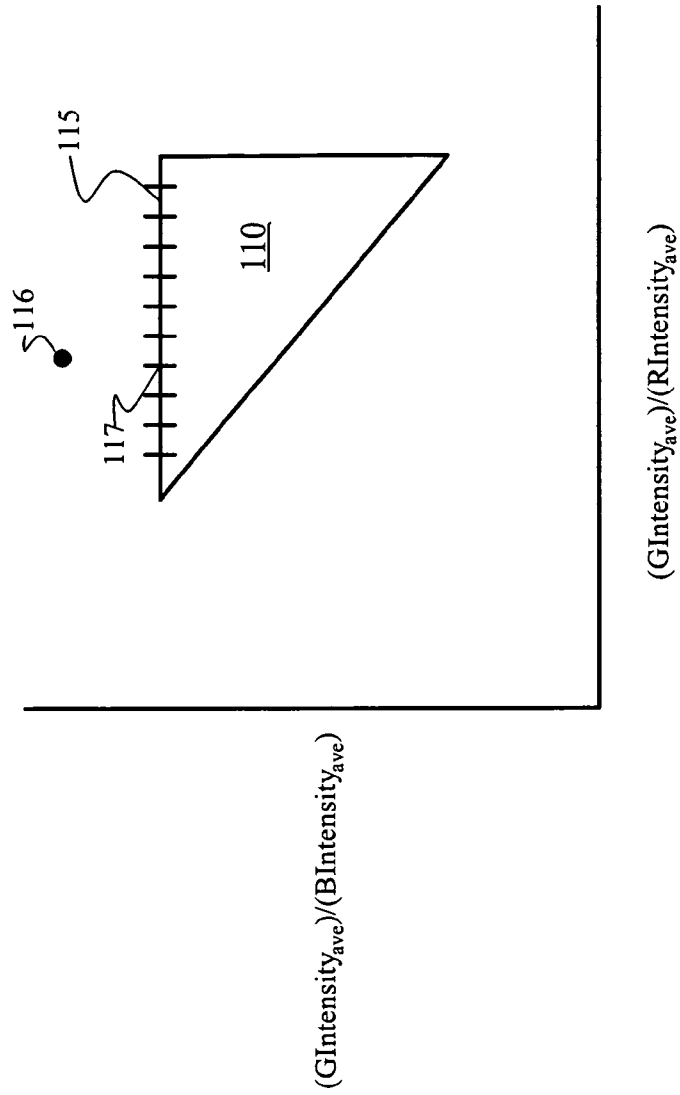


FIGURE 4

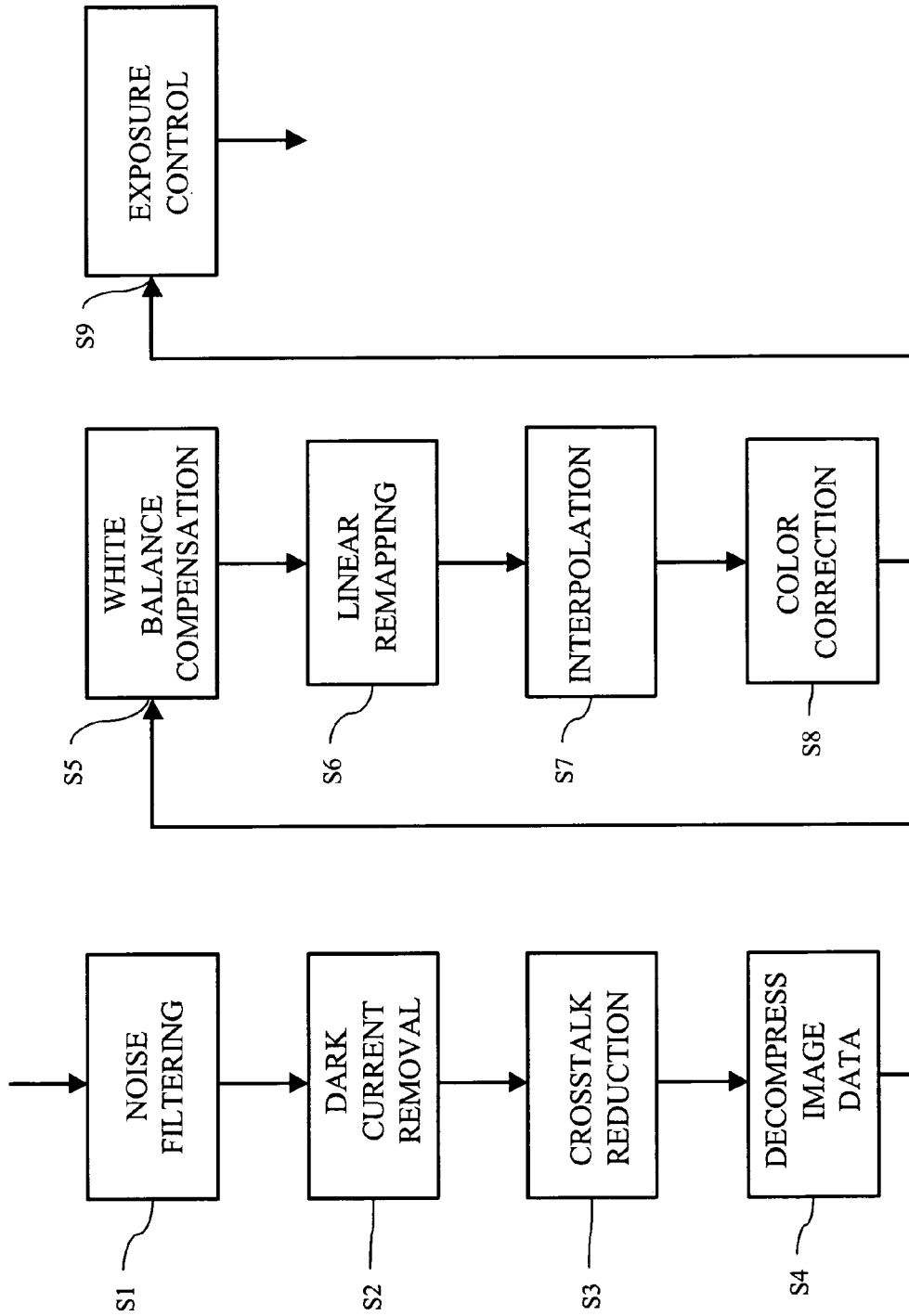


FIGURE 5

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