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**Wu et al.**

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(54) **ANTI-COUNTERFEIT DETECTION METHOD**

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\* cited by examiner

(75) Inventors: **John W. Wu**, Rancho Palos Verdes;  
**Mike C. Chen**, Cerritos, both of CA (US); **Zhigang Fan**, Webster, NY (US); **Kien A. Phong**, Cerritos, CA (US)

*Primary Examiner*—Leo Boudreau  
*Assistant Examiner*—Yosef Kassa

(73) Assignee: **Xerox Corporation**, Stamford, CT (US)

(57) **ABSTRACT**

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This algorithm is a method for resizing and resampling an image in one step. In the vertical, process or slow scan, direction, from the resampling ratio and from the image size variation, an algorithm can compute where, on the page, the scan lines may be deleted. For a numerical example, if the input is 400 pixels per unit time, resampling of four to one would yield one scan line every  $\frac{1}{100}$  of a unit. If, in addition, the image has to be reduced by 5%, then the final output would be one scan line every  $\frac{1}{95}$ <sup>th</sup> of a time unit. This algorithm accomplishes this result by using a running sum of error terms. Simply stated, if it is known that the previous output scan was output at exactly the right time, the error is zero, but if the scan was output too soon or too late, there will be an error term. For each new scan that is now output,  $\frac{1}{400}$ <sup>th</sup> of a time unit is added to the error term. Finally, when the error term rises to a predetermined threshold, then the algorithm knows that that is the closest approximation that can be made, the current scan line is output,  $\frac{1}{95}$ <sup>th</sup> of a time unit is subtracted from the running sum, and the algorithm proceeds to the next scans.

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(52) **U.S. Cl.** ..... **382/298; 345/439; 358/451**

(58) **Field of Search** ..... 382/298, 135,  
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**3 Claims, 2 Drawing Sheets**

