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Faroudja et al.

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(54) **SYSTEM AND METHOD FOR
EDGE-ADAPTIVE AND RECURSIVE
NON-LINEAR FILTERING OF RINGING
EFFECT**

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(57) **ABSTRACT**

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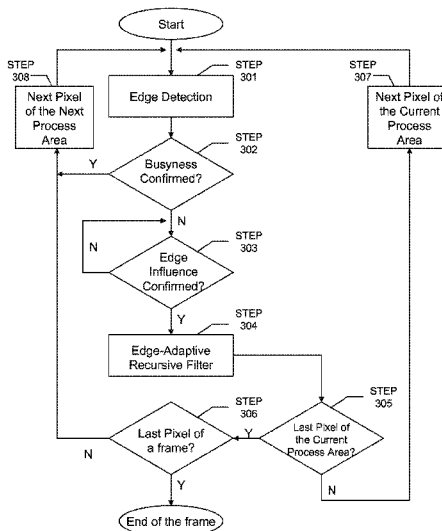
One or more systems and methods for edge-adaptive and recursive non-linear filtering of ringing effect on image or video data are disclosed in accordance with various embodiments of the invention. In one embodiment of the invention, a method for edge-adaptive and recursive non-linear filtering of ringing effect first involves detecting all edges within a process area of an image, including a direction of an edge slope and a value of an edge signal level. Then, if the process area is determined to be a “non-busy” area based on a “busyness” measure relative to empirically-defined threshold values, then an edge influence function subsequently determines whether to apply a de-ringing filter to a current pixel within the process area or not. Preferably, the de-ringing filter is edge-adaptive, non-linear, and recursive. The de-ringing filter can adjust the current pixel multiple times based on filter angles, adjacent pixels, and pixel transition levels.

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CPC **G06T 5/002** (2013.01); **G06T 7/0085** (2013.01)
USPC **382/190**; 382/199; 382/254; 382/260; 382/261

(58) **Field of Classification Search**
None
See application file for complete search history.

24 Claims, 4 Drawing Sheets



A flowchart for edge-adaptive and recursive non-linear filtering of ringing effect from a frame