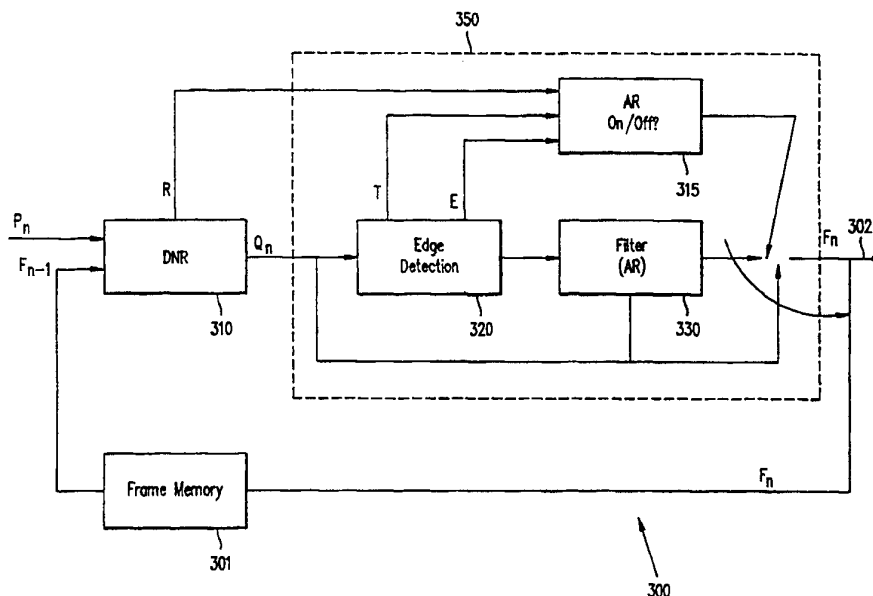




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| <p>(21) International Application Number: PCT/US96/08290<br/>(22) International Filing Date: 5 June 1996 (05.06.96)<br/>(30) Priority Data:<br/>486,279 6 June 1995 (06.06.95) US<br/>(71) Applicant: COMPRESSION LABS, INC. [US/US]; 2860 Junction Avenue, San Jose, CA 95134 (US).<br/>(72) Inventors: GUPTA, Smita; 684 Timberpine Avenue, Sunnyvale, CA 94086 (US). TSE, Yi, Tong; 6662 Bret Harte Drive, San Jose, CA 95120 (US).<br/>(74) Agents: GUNNISON, Forrest, E. et al.; Skjerven, Morrill, MacPherson, Franklin &amp; Friel, Suite 700, 25 Metro Drive, San Jose, CA 95110 (US).</p> | <p>(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TT, UA, UG, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b><br/><i>With international search report.</i><br/><i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report:<br/>20 February 1997 (20.02.97)</p> |   |

(54) Title: A TRANSFORM ARTIFACT REDUCTION PROCESS



(57) Abstract

A post-processor for a decoded video sequence includes a digital noise reduction unit and an artifact reduction unit which significantly reduce blocking artifacts and mosquito noise in a video image. The post-processor uses both temporal and edge characteristics of the video image to enhance the displayed image. The post-processor operates on a current frame of pixel data using information from the immediately preceding post-processed frame that is stored in a frame memory of the post-processor. The post-processor first identifies texture and fine detail areas in the image. The post-processor uses artifact reduction only on portions of the image that are not part of an edge, and are not part of a texture or fine detail area. Since artifact reduction is not utilized on these areas, the post-processed image is not softened in regions where it is easily noticed by the human eye.

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 96/08290

|  |   |                       |
|--|---|-----------------------|
| <b>A. CLASSIFICATION OF SUBJECT MATTER</b><br>IPC 6 H04N7/30 H04N5/21  |   |                       |
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| <b>B. FIELDS SEARCHED</b>  |   |                       |
| Minimum documentation searched (classification system followed by classification symbols)<br>IPC 6 H04N  |   |                       |
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| Electronic data base consulted during the international search (name of data base and, where practical, search terms used)   |   |                       |
| <b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>  |   |                       |
| Category *   | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
| X  | OKADA ET AL: "an adaptive image quality improvement method for dct coding schemes"<br>17 March 1993 , PCS'93 1993 PICTURE CODING SYMPOSIUM PROCEEDINGS, SWISS FEDERAL INSTITUTE OF TECHNOLOGY , LAUSANNE (CH)<br>XP000346472                      | 1                     |
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| 8 January 1997   | 14.01.97  |                       |
| Name and mailing address of the ISA<br>European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax: (+ 31-70) 340-3016 | Authorized officer<br><br>Yvonnet, J  |                       |

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# INTERNATIONAL SEARCH REPORT

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| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT |  |                       |
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