

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today  
(1) was not written for publication in a law journal and  
(2) is not binding precedent of the Board.

Paper No. 34

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte HUN S. OH

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Appeal No. 97-2709  
Application No. 08/380,315<sup>1</sup>

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ON BRIEF

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Before HAIRSTON, MARTIN, and CARMICHAEL, Administrative Patent Judges.

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 11 through 17.

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<sup>1</sup> Application for patent filed January 30, 1995. According to appellant, the application is a continuation of Application 07/822,087, filed January 17, 1992.

The disclosed invention relates to a method and apparatus for compressing an input video signal for transmission, and to a method and apparatus for reproducing the input video signal from the transmitted video signal.

Claim 11 is illustrative of the claimed invention, and it reads as follows:

11. A method of compressing an input video signal for transmission, the method comprising the steps of:

(a) separating the input video signal into frequency components representing horizontal and vertical components of the input video signal using first and second filters, respectively, wherein said first filter is a lowpass filter for passing low band frequencies of said horizontal component, and said second filter is a lowpass filter for passing low band frequencies of said vertical component;

(b) decimating only the low band frequencies respectively output by said first and second filters using first and second decimators, respectively, wherein said first and second decimators decimate the low band frequencies by M:1 to produce a digital output signal representing horizontal and vertical low band frequency components of the input video signal, wherein M is a real number;

(c) interpolating only the digital output signal, prior to transmission thereof, using first and second interpolators for respectively interpolating low band frequencies making up the digital output signal corresponding to said horizontal and vertical components to produce an analog output signal representing horizontal and vertical low band frequency components of the input video signal;

(d) delaying the input video signal for a time period corresponding to a time period required to execute steps (a)

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through (c), and passing the delayed input video signal simultaneously with the output of the analog output signal produced in step (c);

(e) producing an analog difference signal representing a difference between the delayed input video signal and the analog output signal; and

(f) transmitting both the digital output signal and the analog difference signal as a representation of the input video signal.

The references relied on by the examiner are:

|                              |           |          |
|------------------------------|-----------|----------|
| Kretzmer<br>1958             | 2,850,574 | Sept. 2, |
| Gharavi<br>1990              | 4,969,040 | Nov. 6,  |
| Citta et al. (Citta)<br>1991 | 5,016,100 | May 14,  |
| Citta et al. (Citta)<br>1992 | 5,144,431 | Sept. 1, |

(filed Sept. 15,  
1989)

Claims 11 through 17 stand rejected under 35 U.S.C. § 103 as being unpatentable over Citta '100 in view of Gharavi.

Claims 11 through 17 stand rejected under 35 U.S.C. § 103 as being unpatentable over Kretzmer in view of Citta '431 and Gharavi.

Reference is made to the Office Action (paper number 25) immediately prior to the final rejection, the answer and the

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brief for the respective positions of the examiner and the appellant.

OPINION

The obviousness rejections of claims 11 through 17 are reversed.

Citta '100 discloses the separation of a video signal 10 into a high frequency component 12 and a low frequency component 18 (Figure 1). An interpolator 46 is used to reconstruct a low frequency component signal on line 48, and this digital signal is summed with the delayed high frequency component in summation unit 52 to produce a high frequency difference signal 53. The vertical blank insertion unit 40 then inserts the low frequency digital component signal into the vertical blanking interval of the analog high frequency signal.

The examiner acknowledges (paper number 25, page 3) that Citta '100 "does not disclose separate horizontal and vertical components with associated decimators and interpolators".

Gharavi discloses a decimator 105 which decimates the low frequency and the high frequency components of a video signal, and an interpolator 131 in a feedback loop that interpolates

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the low frequency and the high frequency components that are output by the decimator 105. The interpolated outputs on line 145 input a predictor 147 that in turn outputs a predicted PEL value on line 102 for comparison with incoming PELs 101 in the next video frame.

Even if we assume for the sake of argument that it would have been obvious to combine the filter, decimator and interpolator teachings of Gharavi with the low frequency separation teachings of Citta '100 (paper number 25, pages 3 and 4), we still agree with the appellant (Brief, page 12) that "Citta ('100), like Gharavi, neither teaches nor suggests decimating and/or interpolating only the low band frequencies as required by independent claims 11-16." For this reason, the obviousness rejection of claims 11 through 17 based upon the combined teachings of Citta '100 and Gharavi is reversed.

In the alternative obviousness rejection of claims 11 through 17, the examiner notes (paper number 25, page 4) that Kretzmer divides an incoming video signal into a high frequency analog component 17, and a low frequency analog component 15. The examiner acknowledges (paper number 25, pages 4 and 5) that Kretzmer "does not disclose the idea of

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processing the low frequency signal digitally while processing the high frequency by analog means."

Citta '431 discloses that it is advantageous to remove low frequency analog components from a video signal, and digitize them before transmission (Abstract).

Even if we agree with the examiner (paper number 25, page 5) that it would have been obvious to one of ordinary skill in the art to process the low frequency components in Kretzmer in a digital format as taught by Citta '431, we must agree with appellant's argument (Brief, page 17) that Gharavi can not be properly combined with the teachings of Kretzmer and Citta '431 to arrive at the claimed invention because as indicated supra Gharavi does not decimate and/or interpolate only the low band frequencies. The obviousness rejection of claims 11 through 17 based upon the combined teachings of Kretzmer, Citta '431 and Gharavi is reversed.

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DECISION

The decision of the examiner rejecting claims 11 through  
17 under 35 U.S.C. § 103 is reversed.

REVERSED

|                             |   |                 |
|-----------------------------|---|-----------------|
| KENNETH W. HAIRSTON         | ) |                 |
| Administrative Patent Judge | ) |                 |
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|                             | ) | BOARD OF PATENT |
| JOHN C. MARTIN              | ) | APPEALS         |
| Administrative Patent Judge | ) | AND             |
|                             | ) | INTERFERENCES   |
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|                             | ) |                 |
| JAMES T. CARMICHAEL         | ) |                 |
| Administrative Patent Judge | ) |                 |

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DECISION: REVERSED  
Send Reference(s): Yes No  
or Translation (s)  
Panel Change: Yes No  
Index Sheet-2901 Rejection(s): 103

Prepared: November 9, 1999

Draft      Final

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PALM / ACTS 2 / BOOK  
DISK (FOIA) / REPORT