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EXAMINER	
ART UNIT	PAPER NUMBER

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Please find below and/or attached an Office communication concerning this application or proceeding.

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THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS

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EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO 90/007808

PATENT NO. 4,698,672

ART UNI 3992

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified ex parte reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a replly has passed, no submission on behalf of the ex parte reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Office Action in Ex Parte Reexamination	Control No. 90/007,808	Patent Under Reexamination 4698672	
	Examiner Kwang B. Yao	Art Unit 3992	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

a☒ Responsive to the communication(s) filed on *21 November 2005*. b☐ This action is made FINAL.
c☒ A statement under 37 CFR 1.530 has not been received from the patent owner.

A shortened statutory period for response to this action is set to expire 2 month(s) from the mailing date of this letter.
Failure to respond within the period for response will result in termination of the proceeding and issuance of an *ex parte* reexamination certificate in accordance with this action. 37 CFR 1.550(d). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**
If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☐ Notice of References Cited by Examiner, PTO-892.
2. ☒ Information Disclosure Statement, PTO-1449.
3. ☐ Interview Summary, PTO-474.
4. ☐ _____.

Part II SUMMARY OF ACTION

1a. ☒ Claims *1-46* are subject to reexamination.
1b. ☐ Claims _____ are not subject to reexamination.
2. ☐ Claims _____ have been canceled in the present reexamination proceeding.
3. ☒ Claims *2,4,5,7,9,10,14,16-24,26,28,29,31,33,34,37,40,43,45 and 46* are patentable and/or confirmed.
4. ☒ Claims *1,3,6,8,11-13,15,25,27,30,32,35,36,38,39,41,42 and 44* are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ The drawings, filed on _____ are acceptable.
7. ☐ The proposed drawing correction, filed on _____ has been (7a)☐ approved (7b)☐ disapproved.
8. ☐ Acknowledgment is made of the priority claim under 35 U.S.C. § 119(a)-(d) or (f).
   a)☐ All b)☐ Some* c)☐ None of the certified copies have
   1☐ been received.
   2☐ not been received.
   3☐ been filed in Application No. _____ .
   4☐ been filed in reexamination Control No. _____.
   5☐ been received by the International Bureau in PCT application No. _____.
   * See the attached detailed Office action for a list of the certified copies not received.
9. ☐ Since the proceeding appears to be in condition for issuance of an *ex parte* reexamination certificate except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte* Quayle, 1935 C.D. 11, 453 O.G. 213.
10. ☐ Other: _____

cc: Requester (if third party requester)

DETAILED ACTION

Summary of the Invention

1. Chen et al. (US 4,698,672) teaches a coding system for reducing redundancy. As described in column 12, line 29 to column 17, line 48, the coding system is designed to code multi-valued digital numbers where the statistical frequency of occurrence of some values in the series of values forming the digital number is greater than the statistical frequency of occurrence for other values in the series of values forming the digital number. The values forming the digital number are generally the integers 0, 1, 2, 3, ... and so on. In general, a K-valued digital number, X(k), is formed by a series of K values, x(k), as follows:

$$X(k)=x(1), x(2), x(3), \ldots x(k), \ldots, x(K)$$

Where $1 \leq k \leq K$. Each value, x(k), has some value, V_j, from the set of j values, $V_1, V_2, V_3, \ldots, V_j, \ldots, V_J$, where $1 \leq j \leq J$. The occurrence of i consecutive values, V_j, within the series X(k) is the runlength of such values denoted by V_j^i.

For example, with k=1, . . . , 14, if the digital number $X_1(k)$=01000000100021, V_0 =0, V_1 =1 and V_2 =2 then $X_1(k)=V_0^1, V_1^1, V_0^6, V_1^1, V_0^3, V_2^1, V_1^1$. In the series values forming $X_1(k)$, the first value V_0 =0 (*first value*) occurs most frequently, the second value V_1 =1 (*second value*) occurs next most frequently, and the other value V_2 =2 (*other value*) occurs least frequently.

Assume that when the first value, V_0 (*first value*), is followed by the second value, V_1 (*second value*), that the second value is implied and such code is denoted C_{01}^i where i represents the number of consecutive first values V_0 preceding the implied second value, V_1. Assume that when the first value V_0 (*first value*), is not followed by the second value, V_1 (*second value*), but is followed by V_2 (*other value*), such code is denoted C_{01}^{-i}. Assume that any other value is amplitude coded with $A_2 = 2$. With such a notation, X_1 (k)=C_{01}^{1}, C_{01}^{6}, C_{01}^{-3}, A_2, C_{01}^{0}.

In order to code X_1 (k)=C_{01}^{1}, C_{01}^{6}, C_{01}^{-3}, A_2, C_{01}^{0}, each of the values C_{01}^{1}, C_{01}^{6} and so forth are represented by a unique statistical code from a runlength table such that the statistically more frequently occurring values have shorter code lengths and the statistically less frequently occurring values have longer code lengths. Thus, the unique statistical code representing C_{01}^{i} (*first runlength code values*) has shorter code lengths than the one representing C_{01}^{-i} (*second runlength code values*), since the first value V_0 occurs most frequently while the second value V_1 occurs next most frequently and the other value V_2 occurs least frequently.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 3, 6, 8, 11, 12, 13, 15, 25, 27, 30, 32, 35, 36, 38, 39, 41, 42 and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by Tescher (US 4,541,012).

Tescher discloses a video bandwidth reduction system comprising the following features.

Regarding claim 1,

A method for processing digital signals,

Tescher was directed to the processing of digital signal (see Abstract, and column 5, lines 27 to column 8, line 57).

where the digital signals have first values, second values and other values,

Tescher's "first values" were zero (column 8, line 25). Tescher's "second values" were predictive mean values that were greater than or equal to a run length threshold (column 7, lines 43-56). Tescher's "other values" included a block address of a next block to be updated and a frame sync code (Fig. 8; column 8, lines 26-28).

to reduce the amount of data utilized to represent the digital signals and to form statistically coded signals such that the more frequently occurring values of digital signals are represented by shorter code lengths and the less frequently occurring values of digital signals are represented by longer code lengths,

Tescher taught a compression of data that includes Huffman coding technique, "in which the number of bits per specific character depends upon the probability of occurrence of that character." (column 7, lines 4-6; and column 1, lines 62-65). In Huffman coding, fewer bits are used to encode more frequently occurring values.

forming first runlength code values representing the number of consecutive first values of said digital signals followed by said second value,

Tescher taught forming a runlength code value whenever there are consecutive zeros ("first values") followed by a predictive mean value greater than or equal to a run length threshold ("second value"). See Fig. 7 & Fig. 8; column 8, lines 23-25. Tescher stated the following: "a run length code corresponding to the number of successive quantized coefficients having value zero is generated" (column 8, lines 23-25).

forming second runlength code values representing the number of consecutive first values of said digital signals followed by one of said other values.

Tescher taught forming a different runlength code value whenever there are consecutive zeros ("first values") followed by a block address of a next block to be updated or a frame sync code ("other value"). See Fig. 8, column 8, lines 26-28. Tescher stated the following: "If the zero run extends to the end of the block, a special end of block code is generated" (column 8, lines 26-28).

Regarding claim 3, Tescher disclose,

> *including the step of encoding said first and second runlength code values with a sign value.*

Tescher taught encoding values with a sign value. Tescher stated the following: "In the preferred embodiment, each quantized cosine coefficient comprises a 12 bit digital character having 1 sign bit and 11 bits of magnitude" (column 7, lines 45-18).

Regarding claim 6, Tescher disclose,

> *A method for processing input signals to reduce the amount of data utilized to represent the input signals, the steps comprising,*

Tescher was directed to the compression of digital signals (see Abstract; Description of the Preferred Embodiments, column 5 line 27 to column 8, line 57).

> *processing the input signals to form processed signals where the processed signals are digital numbers having first values, second values, and other values,*

Tescher's "first values" were zero (column 8, line 25). Tescher's "second values" were predictive mean values that were greater than or equal to a run length threshold. (column 7, lines 43-56).

Tescher's "other values" included a block address of a next block to be updated and a frame sync code.

> *coding each digital number to form statistically coded signals such that the more frequently occurring values in the digital numbers are represented by shorter code lengths and the less frequently occurring values of coded signals are represented by longer code length,*

Tescher taught a compression of data that included Huffman coding technique. Tescher stated the following: "in which the number of bits per specific character depends upon the probability of occurrence of that character" (column 7, lines 4-6; column 1, lines 62-65). In Huffman coding, fewer bits are used to encode more frequently occurring values.

> *said coding including, forming first runlength code values representing the number of consecutive first values followed by said second value in a digital number,*

Tescher taught forming a runlength code value whenever there were consecutive zeros ("first values") followed by a predictive mean value greater than or equal to a run length threshold ("second value"). See Fig. 7 & Fig. 8. Tescher stated the following: "a run length code corresponding to the number of successive quantized coefficients having value zero is generated" (see column 8, lines 23-25).

> *forming second runlength code values representing the number of consecutive first values followed by one of said other values in the digital number.*

Tescher taught forming a different runlength code value whenever there were consecutive zeros ("first values") followed by a block address of a next block to be updated or a frame sync code ("other values"). See Fig. 8. Tescher stated the following: "If the zero run extends to the end of the block, a special end of block code is generated" (see column 8, lines 26-28).

Regarding claim 8, Tescher discloses

> *wherein said coding step includes the step of encoding said first and second runlength code values with a sign value.*

Tescher taught encoding values with a sign value. Tescher stated the following: "In the preferred embodiment, each quantized cosine coefficient comprises a 12 bit digital character having 1 sign bit and 11 bits of magnitude" (column 7, lines 45-48).

Regarding claim 11, Tescher discloses

> *wherein said coding step further includes the step of providing an end code to designate the end of a digital number.*

Tescher taught the use of an end code. Tescher stated the following: "If the zero run extends to the end of the block, a special end of block code is generated" (column 8, lines 26-28).

Regarding claim 12, Tescher discloses

> *A method for processing digital signals*

Tescher was directed to the processing of digital signal (see Abstract, and column 5, lines 27 to column 8, line 57).

> *where the digital signals have first values, second values and other values,*

Tescher's "first values" were zero (column 8, line 25). Tescher's "second values" were predictive mean values that were greater than or equal to a run length threshold (column 7, lines 43-56). Tescher's "other values" included a block address of a next block to be updated and a frame sync code (Fig. 8; column 8, lines 26-28).

where the processing reduces the amount of data utilized to represent the digital signals and where the processing forms statistically coded signals such that the more frequently occurring values of digital signals are represented by shorter code lengths and the less frequently occurring values of digital signals are represented by longer code lengths,

Tescher taught a compression of data that includes Huffman coding technique, "in which the number of bits per specific character depends upon the probability of occurrence of that character." (column 7, lines 4-6; and column 1, lines 62-65). In Huffman coding, fewer bits are used to encode more frequently occurring values.

forming a first code value representing a set of said first values followed by said second value,

Tescher taught forming a runlength code value whenever there are consecutive zeros ("first values") followed by a predictive mean value greater than or equal to a run length threshold ("second value"). See Fig. 7 & Fig. 8; column 8, lines 23-25. Tescher stated the following: "a run length code corresponding to the number of successive quantized coefficients having value zero is generated" (column 8, lines 23-25).

forming a second code value representing a set of said first values followed by one or more of said other values.

Tescher taught forming a different runlength code value whenever there are consecutive zeros ("first values") followed by a block address of a next block to be updated or a frame sync code ("other value"). See Fig. 8, column 8, lines 26-28. Tescher stated the following: "If the zero run extends to the end of the block, a special end of block code is generated" (column 8, lines 26-28).

Regarding claim 13,

A method for processing digital signals to reduce the amount of data utilized to represent the digital signals, the steps comprising,

Tescher was directed to the processing of digital signal (see Abstract, and column 5, lines 27 to column 8, line 57).

processing the digital signals to form processed signals where the processed signals are multivalued digital numbers and have first values, second values, . . . , j-values, (j+1)-values, . . . , n-values for j ranging from 1 to n, and have other values,

It is noted that the claimed "j" can be ranged from 1 to n as recited. Therefore, Tescher anticipates the claimed features when "j" is ranged from 1 to 2. Tescher's "first values" were zero (column 8, line 25). Tescher's "second values" were predictive mean values that were greater than or equal to a run length threshold (column 7, lines 43-56). Tescher's "other values" included a block address of a next block to be updated and a frame sync code (Fig. 8; column 8, lines 26-28).

coding said processed signals to form statistically coded signals such that the more frequently occurring values of the processed signals are represented by shorter code *lengths and the less frequently occurring values of coded signals are represented by longer code lengths,*

Tescher taught a compression of data that includes Huffman coding technique, "in which the number of bits per specific character depends upon the probability of occurrence of that character." (column 7, lines 4-6; and column 1, lines 62-65). In Huffman coding, fewer bits are used to encode more frequently occurring values.

said coding including, forming j_{th} *runlength code values representing the number of consecutive processed signals of said first value followed by said j+1 value, for each value of j from 1 to n,*

Tescher taught forming a runlength code value whenever there are consecutive zeros ("first values") followed by a predictive mean value greater than or equal to a run length threshold ("second value"). See Fig. 7 & Fig. 8; column 8, lines 23-25. Tescher stated the following: "a run length code corresponding to the number of successive quantized coefficients having value zero is generated" (column 8, lines 23-25).

forming additional runlength code values representing the number of consecutive processed signals of said first value followed by any of said other values.

Tescher taught forming a different runlength code value whenever there are consecutive zeros ("first values") followed by a block address of a next block to be updated or a frame sync code ("other value"). See Fig. 8, column 8, lines 26-28. Tescher stated the following: "If the zero run extends to the end of the block, a special end of block code is generated" (column 8, lines 26-28).

Regarding claim 15,

wherein said coding step includes the step of encoding said j runlength code values with a sign value.

Tescher taught encoding values with a sign value. Tescher stated the following: "In the preferred embodiment, each quantized cosine coefficient comprises a 12 bit digital character having 1 sign bit and 11 bits of magnitude" (column 7, lines 45-18).

Regarding claim 25,

An apparatus for processing digital signals,

Tescher was directed to the processing of digital signal (see Abstract, and column 5, lines 27 to column 8, line 57).

where the digital signals have first values, second values and other values,

Tescher's "first values" were zero (column 8, line 25). Tescher's "second values" were predictive mean values that were greater than or equal to a run length threshold (column 7, lines 43-56). Tescher's "other values" included a block address of a next block to be updated and a frame sync code (Fig. 8; column 8, lines 26-28).

to reduce the amount of data utilized to represent the digital signals and to form statistically coded signals such that the more frequently occurring values of digital signals are represented by shorter code lengths and the less frequently occurring values of digital signals are represented by longer code lengths, comprising,

Tescher taught a compression of data that includes Huffman coding technique, "in which the number of bits per specific character depends upon the probability of occurrence of that

character." (column 7, lines 4-6; and column 1, lines 62-65). In Huffman coding, fewer bits are used to encode more frequently occurring values.

means for forming first runlength code values representing the number of consecutive first values of said digital signals followed by said second value,

Tescher taught forming a runlength code value whenever there are consecutive zeros ("first values") followed by a predictive mean value greater than or equal to a run length threshold ("second value"). See Fig. 7 & Fig. 8; column 8, lines 23-25. Tescher stated the following: "a run length code corresponding to the number of successive quantized coefficients having value zero is generated" (column 8, lines 23-25).

means for forming second runlength code values representing the number of consecutive first values of said digital signals followed by one of said other values.

Tescher taught forming a different runlength code value whenever there are consecutive zeros ("first values") followed by a block address of a next block to be updated or a frame sync code ("other value"). See Fig. 8, column 8, lines 26-28. Tescher stated the following: "If the zero run extends to the end of the block, a special end of block code is generated" (column 8, lines 26-28).

Regarding claim 27,

further including means for encoding said first and second runlength code values with a sign value.

Tescher taught encoding values with a sign value. Tescher stated the following: "In the preferred embodiment, each quantized cosine coefficient comprises a 12 bit digital character having 1 sign bit and 11 bits of magnitude" (column 7, lines 45-18).

Regarding claim 30,

> *An apparatus for processing input signals to reduce the amount of data utilized to represent the input signals, the apparatus comprising,*

Tescher was directed to the processing of digital signal (see Abstract, and column 5, lines 27 to column 8, line 57).

> *means for processing the input signals to form processed signals where the processed signals are digital numbers having first values, second values, and other values,*

Tescher's "first values" were zero (column 8, line 25). Tescher's "second values" were predictive mean values that were greater than or equal to a run length threshold (column 7, lines 43-56). Tescher's "other values" included a block address of a next block to be updated and a frame sync code (Fig. 8; column 8, lines 26-28).

> *means for coding each digital number to form statistically coded signals such that the more frequently occurring values in the digital numbers are represented by shorter code lengths and the less frequently occurring values in the digital numbers are represented by longer code lengths, said means for coding including,*

Tescher taught a compression of data that includes Huffman coding technique, "in which the number of bits per specific character depends upon the probability of occurrence of that

character." (column 7, lines 4-6; and column 1, lines 62-65). In Huffman coding, fewer bits are used to encode more frequently occurring values.

means for forming first runlength code values representing the number of consecutive first values followed by said second value in a digital number,

Tescher taught forming a runlength code value whenever there are consecutive zeros ("first values") followed by a predictive mean value greater than or equal to a run length threshold ("second value"). See Fig. 7 & Fig. 8; column 8, lines 23-25. Tescher stated the following: "a run length code corresponding to the number of successive quantized coefficients having value zero is generated" (column 8, lines 23-25).

means for forming second runlength code values representing the number of consecutive first values followed by one of said other values in the digital number.

Tescher taught forming a different runlength code value whenever there are consecutive zeros ("first values") followed by a block address of a next block to be updated or a frame sync code ("other value"). See Fig. 8, column 8, lines 26-28. Tescher stated the following: "If the zero run extends to the end of the block, a special end of block code is generated" (column 8, lines 26-28).

Regarding claim 32,

wherein said means for coding includes means for encoding said first and second runlength code values with a sign value.

Tescher taught encoding values with a sign value. Tescher stated the following: "In the preferred embodiment, each quantized cosine coefficient comprises a 12 bit digital character having 1 sign bit and 11 bits of magnitude" (column 7, lines 45-18).

Regarding claim 35,

> *wherein said means for coding further includes means for providing an end code to designate an end of a digital number.*

Tescher taught the use of an end code. Tescher stated the following: "If the zero run extends to the end of theblock, a special end of block code is generated" (column 8, lines 26-28).

Regarding claim 36,

> *An apparatus for processing digital signals to reduce the amount of data utilized to represent the digital signals, comprising,*

Tescher was directed to the processing of digital signal (see Abstract, and column 5, lines 27 to column 8, line 57).

> *means for processing the digital signals to form processed signals where the processed signals are multivalued digital numbers and have first values, second values, . . . , j-values, (j+1)-values, . . . , n-values for j ranging from 1 to n, and have other values,*

It is noted that the claimed "j" can be ranged from 1 to n as recited. Therefore, Tescher anticipates the claimed features when "j" is ranged from 1 to 2. Tescher's "first values" were zero (column 8, line 25). Tescher's "second values" were predictive mean values that were greater than or equal to a run length threshold (column 7, lines 43-56). Tescher's "other values" included a block address of a next block to be updated and a frame sync code (Fig. 8; column 8, lines 26-28).

means for coding said processed signals to form statistically coded signals such that the more frequently occurring values in the digital numbers are represented by shorter code lengths and the less frequently occurring values in the digital numbers are represented by longer code lengths,

Tescher taught a compression of data that includes Huffman coding technique, "in which the number of bits per specific character depends upon the probability of occurrence of that character." (column 7, lines 4-6; and column 1, lines 62-65). In Huffman coding, fewer bits are used to encode more frequently occurring values.

said means for coding including, means for forming j_{th} *runlength code values representing the number of consecutive processed signals of said first value followed by said j+1 value, for each value of j from 1 to n,*

Tescher taught forming a runlength code value whenever there are consecutive zeros ("first values") followed by a predictive mean value greater than or equal to a run length threshold ("second value"). See Fig. 7 & Fig. 8; column 8, lines 23-25. Tescher stated the following: "a run length code corresponding to the number of successive quantized coefficients having value zero is generated" (column 8, lines 23-25).

means for forming additional runlength code values representing the number of consecutive processed signals of said first value followed by any of said other values.

Tescher taught forming a different runlength code value whenever there are consecutive zeros ("first values") followed by a block address of a next block to be updated or a frame sync code ("other value"). See Fig. 8, column 8, lines 26-28. Tescher stated the following: "If the zero run extends to the end of the block, a special end of block code is generated" (column 8, lines 26-28).

Regarding claim 38,

A method for processing digital signals,

Tescher was directed to the processing of digital signal (see Abstract, and column 5, lines 27 to column 8, line 57).

where the digital signals have first values, second values and other values,

Tescher's "first values" were zero (column 8, line 25). Tescher's "second values" were predictive mean values that were greater than or equal to a run length threshold (column 7, lines 43-56). Tescher's "other values" included a block address of a next block to be updated and a frame sync code (Fig. 8; column 8, lines 26-28).

where the processing reduces the amount of data utilized to represent the digital signals and where the processing forms statistically coded signals such that the more frequently occurring values of digital signals are represented by shorter code lengths and the less frequently occurring values of digital signals are represented by longer code lengths,

Tescher taught a compression of data that includes Huffman coding technique, "in which the number of bits per specific character depends upon the probability of occurrence of that character." (column 7, lines 4-6; and column 1, lines 62-65). In Huffman coding, fewer bits are used to encode more frequently occurring values.

where a first code value is formed representing a set of said first values followed by said second value,

Tescher taught forming a runlength code value whenever there are consecutive zeros ("first values") followed by a predictive mean value greater than or equal to a run length threshold ("second value"). See Fig. 7 & Fig. 8; column 8, lines 23-25. Tescher stated the following: "a run length code corresponding to the number of successive quantized coefficients having value zero is generated" (column 8, lines 23-25).

a second code value is formed representing a set of said first values followed by one or more of said other value comprising,

Tescher taught forming a different runlength code value whenever there are consecutive zeros ("first values") followed by a block address of a next block to be updated or a frame sync code ("other value"). See Fig. 8, column 8, lines 26-28. Tescher stated the following: "If the zero run extends to the end of the block, a special end of block code is generated" (column 8, lines 26-28).

decoding said first code value to form a set of said first values followed by said second value, decoding said second code value to form a set of said first values followed by one or more of said other values.

Tescher taught inverse processing for the received information code symbols depicted in Fig. 2. Decoder unit 22' contains the inverse code tables illustrated in Appendix B which generate digital values from the received code symbols applied to the input thereof. The tables are arranged in a manner similar to that employed in coder unit 22, so that the coded values are all applied to their respective dedicated tables (column 10, line 3 to column 11, line 51).

Regarding claim 39,

A method for processing digital signals to reduce the amount of data utilized to represent the digital signals, the steps comprising,

Tescher was directed to the processing of digital signal (see Abstract, and column 5, lines 27 to column 8, line 57).

processing the digital signals to form processed signals where the processed signals are multivalued digital numbers and have first values, second values, . . . , j-values, (j+1)-values, . . . , n-values for j ranging from 1 to n, and have other values,

It is noted that the claimed "j" can be ranged from 1 to n as recited. Therefore, Tescher anticipates the claimed features when "j" is ranged from 1 to 2. Tescher's "first values" were zero (column 8, line 25). Tescher's "second values" were predictive mean values that were greater than or equal to a run length threshold (column 7, lines 43-56). Tescher's "other values" included a block address of a next block to be updated and a frame sync code (Fig. 8; column 8, lines 26-28).

coding said processed signals to form statistically coded signals such that the more frequently occurring values of the processed signals are represented by shorter code lengths and the less frequently occurring values of coded signals are represented by longer code lengths, said coding including,

Tescher taught a compression of data that includes Huffman coding technique, "in which the number of bits per specific character depends upon the probability of occurrence of that

character." (column 7, lines 4-6; and column 1, lines 62-65). In Huffman coding, fewer bits are used to encode more frequently occurring values.

forming j_{th} runlength code values representing the number of consecutive processed signals of said first value followed by said j+1 value, for each value of j from 1 to n,

Tescher taught forming a runlength code value whenever there are consecutive zeros ("first values") followed by a predictive mean value greater than or equal to a run length threshold ("second value"). See Fig. 7 & Fig. 8; column 8, lines 23-25. Tescher stated the following: "a run length code corresponding to the number of successive quantized coefficients having value zero is generated" (column 8, lines 23-25).

forming additional runlength code values representing the number of consecutive processed signals of said first value followed by any of said other values,

Tescher taught forming a different runlength code value whenever there are consecutive zeros ("first values") followed by a block address of a next block to be updated or a frame sync code ("other value"). See Fig. 8, column 8, lines 26-28. Tescher stated the following: "If the zero run extends to the end of the block, a special end of block code is generated" (column 8, lines 26-28).

transmitting said j_{th} runlength code values and said additional runlength code values to a receiver to form received signal including received j_{th} runlength code values and received additional runlength code values,

Tescher taught the features of transmitting the coded values from a transmitting station to a receiving station (column 2, lines 32-45). Tescher further taught that the coded values were transmitted in a suitable link to the decoder system depicted in Fig. 2 for providing inverse processing for the received information code values (column 10, lines 3-7).

> *decoding said received signals to form decoded signals, said decoding including, decoding said received j_{th} runlength code values to form a number of consecutive decoded signals of said first value followed by said j+1 value, for each value of j from 1 to n, decoding said received additional runlength code values to form a number of consecutive decoded signals of said first value followed by any of said other values.*

Tescher taught the features of inverse processing for the received information code symbols depicted in Fig. 2. Decoder unit 22' contains the inverse code tables illustrated in Appendix B which generate digital values from the received code symbols applied to the input thereof. The tables are arranged in a manner similar to that employed in coder unit 22, so that the coded values are all applied to their respective dedicated tables (column 10, line 3 to column 11, line 51).

Regarding claim 41,

> *wherein said coding step includes the step of encoding said j runlength code values with a sign value.*

Tescher taught encoding values with a sign value. Tescher stated the following: "In the preferred embodiment, each quantized cosine coefficient comprises a 12 bit digital character having 1 sign bit and 11 bits of magnitude" (column 7, lines 45-18).

Regarding claim 42,

An apparatus for processing input signals to reduce the amount of data utilized to represent the input signals, the apparatus comprising,

Tescher was directed to the processing of digital signal (see Abstract, and column 5, lines 27 to column 8, line 57).

means for processing the input signals to form processed signals where the processed signals are digital numbers having first values, second values, and other values,

Tescher's "first values" were zero (column 8, line 25). Tescher's "second values" were predictive mean values that were greater than or equal to a run length threshold (column 7, lines 43-56). Tescher's "other values" included a block address of a next block to be updated and a frame sync code (Fig. 8; column 8, lines 26-28).

means for coding each digital number to form statistically coded signals such that the more frequently occurring values in the digital numbers are represented by shorter code lengths and the less frequently occurring values in the digital numbers are represented by longer code lengths, said means for coding including,

Tescher taught a compression of data that includes Huffman coding technique, "in which the number of bits per specific character depends upon the probability of occurrence of that character." (column 7, lines 4-6; and column 1, lines 62-65). In Huffman coding, fewer bits are used to encode more frequently occurring values.

means for forming first runlength code values representing the number of consecutive first values followed by said second value in a digital number,

Tescher taught forming a runlength code value whenever there are consecutive zeros ("first values") followed by a predictive mean value greater than or equal to a run length threshold ("second value"). See Fig. 7 & Fig. 8; column 8, lines 23-25. Tescher stated the following: "a run length code corresponding to the number of successive quantized coefficients having value zero is generated" (column 8, lines 23-25).

means for forming second runlength code values representing the number of consecutive first values followed by one of said other values in the digital number,

Tescher taught forming a different runlength code value whenever there are consecutive zeros ("first values") followed by a block address of a next block to be updated or a frame sync code ("other value"). See Fig. 8, column 8, lines 26-28. Tescher stated the following: "If the zero run extends to the end of the block, a special end of block code is generated" (column 8, lines 26-28).

means for transmitting said j_{th} runlength code values and said additional runlength code values to a receiver to form received signal including received j_{th} runlength code values and received additional runlength code values,

Tescher taught the features of transmitting the coded values from a transmitting station to a receiving station (column 2, lines 32-45). Tescher further taught that the coded values were transmitted in a suitable link to the decoder system depicted in Fig. 2 for providing inverse processing for the received information code values (column 10, lines 3-7).

means for decoding said received signals to form decoded signals, said means for decoding including, means for decoding said received j_{th} runlength code values to form a number of consecutive decoded signals of said first value followed by said j+1 value, for each value of j from 1 to n, means for decoding said received additional runlength code *values to form a number of consecutive decoded signals of said first value followed by any of said other values.*

Tescher taught the features of inverse processing for the received information code symbols depicted in Fig. 2. Decoder unit 22' contains the inverse code tables illustrated in Appendix B which generate digital values from the received code symbols applied to the input thereof. The tables are arranged in a manner similar to that employed in coder unit 22, so that the coded values are all applied to their respective dedicated tables (column 10, line 3 to column 11, line 51).

Regarding claim 44,

wherein said means for coding includes means for encoding said first and second runlength code values with a sign value.

Tescher taught encoding values with a sign value. Tescher stated the following: "In the preferred embodiment, each quantized cosine coefficient comprises a 12 bit digital character having 1 sign bit and 11 bits of magnitude" (column 7, lines 45-18).

STATEMENT OF REASONS FOR PATENTABILITY AND/OR CONFIRMATION

4. The following is an examiner's statement of reasons for patentability and/or confirmation of the claims found patentable in this reexamination proceeding:

Claims 2, 4, 5, 7, 9, 10, 14, 16-24, 26, 28, 29, 31, 33, 34, 37, 40, 43, 45 and 46 are confirmed. The prior art Tescher (US 4,541,012) discloses a video bandwidth reduction system. However, Tescher (US 4,541,012) fails to disclose that a method or an apparatus of processing input signals to reduce the amount of data utilized to represent the input signals comprises the following features. Regarding claim 2, the step of amplitude encoding said other values. Regarding claim 4, wherein said first values have amplitude zero, said second values have absolute amplitude one, and said other values have absolute amplitudes greater than one whereby said first and second runlength codes values are formed representing the number of consecutive zeros. Regarding claim 5, wherein said first values have the highest frequency of occurrence in said digital signals, wherein said second values have the next highest frequency of occurrence in said digital signals, and wherein said other values have the lowest frequency of occurrence in said digital signals. Regarding claim 7, wherein said coding step includes the step of amplitude encoding said other values. Regarding claim 9, wherein said processing step forms said first values with amplitude zero, forms said second values with absolute amplitude one, and forms said other values with absolute amplitudes greater than one. Regarding claim 10, wherein a table is provided storing a plurality of runlength code values representing a plurality of different numbers of consecutive first values followed by said second value, and storing a plurality of second runlength code values representing a plurality of different numbers of consecutive first values followed by one of said other values, said first runlength code values and said second runlength code values statistically organized in said table such that the statistically more frequently occurring runlength code values are represented by shorter code lengths and the less frequently occurring values are represented by longer code lengths, and wherein said step of forming first runlength code values is performed by table lookup from said table, said step of forming second runlength code values is performed by table lookup from said table. Regarding claim 14, wherein said coding step includes the step of amplitude encoding said other values.

Regarding claim 16, wherein said processing step with n=2 forms said first values with j=1 equal to amplitude zero, forms said second values with j=2 equal to absolute amplitude one, and forms said other values with absolute amplitudes greater than one. Regarding claim 17, wherein said processing step forms said first values with j=1 equal to amplitude zero, forms said second values with j=2 equal to absolute amplitude one, and forms third values with j=3 equal to absolute amplitude two, and forms other values for n=3 with absolute amplitude greater than 2. Regarding claim 18, wherein said processing step includes multiple modes of processing said digital signals to form said processed signals, and includes the step of selecting one of said modes based upon differences in said input signals. Regarding claims 19-24, wherein said input signals represent images and are presented in sequential frames, said processing step including multiple processing modes for processing said input signals to form said processed signals, and including the step of forming the mean-square difference, d_0, between input signals from the current frame and representations of input signals from the previous frame and includes the step of forming the mean-square error, d_b, between input signals from the present frame and the best matched representation of input signals from the previous frame, said processing step including the step of comparing the difference, $d_0 - d_b$, with a motion threshold T_M, and selecting one of said modes based on said comparison. Regarding claim 26, including means for amplitude encoding said other values. Regarding claim 28, wherein said first values have amplitude zero, said second values have absolute amplitude one, and said other values have absolute amplitudes greater than one whereby said first and second runlength codes values are formed representing the number of consecutive zeros. Regarding claim 29, wherein said first values have the highest frequency of occurrence in said digital signals, wherein said second values have the next highest frequency of occurrence in said digital signals, and wherein said other values have the lowest frequency of occurrence in said digital signals. Regarding claim 31, wherein said means for coding includes means for amplitude encoding said other values. Regarding claim 33, wherein said means for processing forms said first values with amplitude zero, forms said second values with absolute amplitude one, and forms said other values with absolute amplitudes greater than one. Regarding claim 34, including an addressable table storing runlength code values representing different numbers of consecutive first values followed by said second value, and storing a plurality of second runlength code values representing different numbers of said first values followed by one of said other values, said first runlength code values and said second runlength code values organized in said table such that the statistically more frequently occurring runlength code values in digital numbers are represented by shorter code lengths and the less frequently occurring values in digital numbers are represented by longer code lengths, and wherein said means for forming first runlength code values includes means for addressing said addressable table with a runlength number representing the runlength of said first value followed by said second value in order to obtain said first runlength code value from said table, and said means for forming second runlength code values includes means for addressing said addressable table with a runlength number representing the runlength of said first value followed by one of said other values in order to obtain said second runlength code value. Regarding claim 37, wherein said digital signals represent pixels forming images in sequential frames, said means for processing includes multiple mode processing means for processing said digital signals to form said processed signals, and includes means for forming the mean-square difference, d_0, between digital signals representing pixels of the current frame and digital signals representing pixels of the previous frame and includes means for forming the mean-square error, d_b, between the digital signals representing pixels in the present frame and digital signals representing the best matched pixels of the previous frame, said means for processing further including means for comparing the difference, d_0 -d_b, with a motion threshold T_M, and means for selecting one of said modes based on said comparison. Regarding claim 40, wherein said coding step includes the step of amplitude encoding said other values. Regarding claim 43, wherein said means for coding includes means for amplitude encoding said other values. Regarding claim 45, wherein said means for processing forms said first values with amplitude zero, forms said second values with absolute amplitude one, and forms said other values with absolute amplitudes greater than one. Regarding claim 46, including an addressable table storing runlength code values representing different numbers of consecutive first values followed by said second value, and storing a plurality of second runlength code values representing different numbers of said first values followed by one of said other values, said first runlength code values and said second runlength code values organized in said table such that the statistically more frequently occurring runlength code values in digital numbers are represented by shorter code lengths and the less frequently occurring values in digital numbers are represented by longer code lengths, and wherein said means for forming first runlength code values includes means for addressing said addressable table with a runlength number representing the runlength of said first value followed by said second value in order to obtain said first runlength code value from said table, and said means for forming second runlength code values includes means for addressing said addressable table with a runlength number representing the runlength of said first value followed by one of said other values in order to obtain said second runlength code value.

Any comments considered necessary by PATENT OWNER regarding the above statement must be submitted promptly to avoid processing delays. Such submission by the patent owner should be labeled: "Comments on Statement of Reasons for Patentability and/or Confirmation" and will be placed in the reexamination file.

Comments on Request

5. Regarding claims 2 and 7, first of all, "amplitude encoding values" in the combination of other claimed features would not be considered obvious in light of the prior art, as there is no sufficient evidence to show that amplitude encoding **the other values** is well known in the art, wherein the **other values** are following the first values and second values in the digital signals (emphasis added). Chen et al. discloses that the runlength code is typically followed by an amplitude code which explicitly encodes the actual amplitude of other values (See column 5, lines 42-45). Moreover, on lines 23-44 of column 13, Chen et al. describes an example of amplitude encoding steps for multivalued digital numbers. On the other hand, Tescher discloses that the data is Huffman coded using one the tables 1-6, 8 listed in appendix A (see column 7, line 67 to column 8, line 1; column 8, lines 23-28). This clearly shows that the data values disclosed in Tescher are encoded by using the tables 1-6, 8 without taking the amplitude value into account. Therefore, it is respectfully submitted the Tescher 's Huffman coding method without considering the amplitude of data values does not anticipate the claims 2 and 7 of Chen et al. (US 4,698,672).

6. Regarding claims 4 and 9, as suggested by Requester, Tescher's other values, depicted in Fig. 8, and described in column 8, lines 26-28, included a block address of a next block to be updated or a frame sync code, **neither of which were limited to being less than or equal to one** (emphasis added). However, the above features cannot be found in the prior art. Moreover, there is not sufficient evidence to show that it was inherent in "runlength coding that runlength code values represent the number of consecutive zeros".

7. Regarding claim 5, Requester states the following:

> "Tescher's method was applicable to digital signals wherein zeros ("first values") had the highest frequency of occurrence, predictive mean values greater than or equal to a run length threshold ("second values") had the next highest frequency of occurrence, and a block address of a next block to be updated or a frame sync code ("other values") had the lowest frequency of occurrence. Further, Tescher taught the general concept of Huffman coding that those values with the highest frequency of occurrence are represented with shorter lengths than those values with lower frequency of occurrence. Appendix A. Thus, it would have been obvious to one of ordinary skill in the art to implement Tescher's compression technique such that those values with the highest frequency of occurrence are represented with shorter lengths than those values with lower frequency of occurrence. The express teaching of Huffman coding by Tescher provided the necessary motivation to do so."

First of all, it is noted that Tescher fails to teach or suggest the limitations of "wherein said **first values** have the **highest** frequency of occurrence in said digital signals, wherein said **second values** have the **next highest** frequency of occurrence in said digital signals, and wherein said **other values** have the **lowest frequency** of occurrence in said digital signals" (emphasis added). Without teaching all the claimed limitations, the prior art of Tescher cannot render claim 5 obvious. In this regard, MPEP 2143.03 states,

> "To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)."

Moreover, for example in Table 4 in Appendix A of Tescher, the entry 0 with highest occurrence of **5652** is represented by length **3**, while the entry 2 with lower occurrence of **3916** is represented by length **3** (emphasis added). It clearly shows that the highest occurrence of 5652 and lower occurrence of 3916 have the same length 3. This example appears to contradict the Requester's statements of "Tescher's compression technique such that those values with the **highest** frequency of occurrence are represented with shorter lengths than those values with **lower** frequency of occurrence". (Emphasis added). Therefore, it is respectfully submitted that Tescher does not teach or suggest claim 5 and does not provide the necessary motivation to do so.

8. Regarding claim 10, Requester states the following:

> "Tescher taught the use of a table to store Huffman Code values representing different values (called "Entries") that were organized such that the more frequently occurring values were represented by shorter code lengths. Appendix A. Tescher also taught forming code values by looking up code values from the table. 7:35-37 ("encoded using dedicated Huffman code table number 7 shown in appendix A"). It would have been obvious to one of ordinary skill in the art to use a similar compression code table for the runlength values taught by Tescher. One of ordinary skill in the art would have been motivated to use such a table for runlength coding for the same reasons that Tescher used tables for Huffman coding."

First of all, it is noted that Tescher fails to teach or suggest the limitations of "wherein a table is provided storing a plurality of runlength code values representing a plurality of different numbers of consecutive first values followed by said second value, and storing a plurality of second runlength code values representing a plurality of different numbers of consecutive first values followed by one of said other values, **said first runlength code values and said second runlength code values statistically organized in said table such that the statistically more frequently occurring runlength code values are represented by shorter code lengths and the less frequently occurring values are represented by longer code lengths**, and wherein said step of forming first runlength code values is performed by table lookup from said table, said step of forming second runlength code values is performed by table lookup from said table" (emphasis added). Without teaching all the claimed limitations, the prior art of Tescher cannot render claim 10 obvious. In this regard, MPEP 2143.03 states,

> "To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)."

Moreover, for example in Table 4 in Appendix A of Tescher, the entry 0 with highest occurrence of **5652** is represented by length **3**, while the entry 2 with lower occurrence of **3916** is represented by length **3** (emphasis added). It clearly shows that the highest occurrence of 5652 and lower occurrence of 3916 have the same length 3. The Table 4 of Tescher shows that the statistically more frequently occurring runlength code values are represented by **the same code lengths** as the less frequently occurring values (emphasis added). This example appears to contradict the Requester's statements of "Tescher taught the use of a table to store Huffman Code values representing different values (called "Entries") that were organized such that the more frequently occurring values were represented by shorter code lengths". Therefore, it is respectfully submitted that Tescher does not teach or suggest claim 10 and does not provide the necessary motivation to do so.

Conclusion

The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a), to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving Patent No. 4,698,672 throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

In order to ensure full consideration of any amendments, affidavits or declarations, or other documents as evidence of patentability, such documents must be submitted in response to this Office action. Submissions after the next Office action, which is intended to be a final action, will be governed by the requirements of 37 CFR 1.116, after final rejection and 37 CFR 41.33 after appeal, which will be strictly enforced.

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extension of time in ex parte reexamination proceedings are provided for in 37 CFR 1.550(c).

All correspondence relating to this ex parte reexamination proceeding should be directed:

By U.S. Postal Service Mail:

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Any inquiry concerning this communication or earlier communications from the examiner, or as to the to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

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