Method of Encoding a Video Frame Based on the Identification Vectors Seal Structural Transformed Space

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***Abstract* — The necessity of the development of technologies efficiently syntactic representation of video segments based on the construction of a two-dimensional structure of compacted spectral space (DSS). Assesses the information content of the vector object identifiers coordinate DSS transforms the space. It sets out to develop an efficient syntactic representation of transformants based on the dibasic dimensional object in a positional coding flexible paired inequalities elements. Heldsynthesis ratios system forming the core technology effective syntactic representation of the video segment on the basis of forming the densified dimensional spectral space with subsequent structural dibasic dimensional object positional identifiers coded in the space under the flexible presence inequality paired elements.**

***Index Terms* — transformants, vector, video frame, two-dimensional spectral space.**

I. Introduction

Organization of video information services using remote means aero monitoring characterized by a number of problematic aspects. It defines the criticality of such services. Principal aspects here in relate to: the occurrence of delays in step transmitting information between the ground and onboard complex reception point, which is caused by disbalance bandwidth onboard communication systems and the increase of the intensity of information streams; the presence of significant loss of integrity of the information in the transmission process through the communication channels due to insufficient resistance to uncontrolled degradation overheads [1], [2], [6], [15]-[18].

In collection systems, remote video key nucleus formation balance between reducing the intensity information and software information is integrity technology effective syntactic representation of video streams. This balance is achieved by the search for solutions in the direction of the organization of the syntactic representation of video-frames for which are provided with such conditions as multidisciplinary performances for simultaneous organization compression properties and resistance to destructive distortions; intellectualization of security data integrity mechanisms level structural descriptions of syntactic patterns movies [1], [2].

For standardized technologies, syntactic representations of video frames are mainly used in the JPEG technological solutions platform [2] – [4]. However, the potential characteristics of JPEG technology in its component composition, which exists at the moment, it is not enough to provide the increased demands for the provision of video information services. In this connection, it is necessary to substantiate and develop a method for efficiently parsing encoding video that is based on new technological principles in aspects identify patterns and their structural organization on code formation level.

It is assumed that the basic shell of syntactic representation is generated using a standardized approach. Updating the kernel will undergo the process of the video processing [6].

Consider the basic concept of the technology on the JPEG-platform. At the core shell component is used coding strategy transformants for three of the video segments in which plane the color difference color model. This takes into account the following properties: the concentration of the main raw signal energy in a limited number of low-frequency components of transformants; selection area of the high-frequency component; formation transformants component with zero values. These properties are placed in the conceptual structure of the basic strategies of coding componentization transformants [9], [10].

In [2]–[4], [24]–[28] proposed to construct encoding process with the selection of the lengths of the chains consisting of insignificant component transformants. This allows you to build a sealed two-dimensional structural spectral space (DSS). In this connection, it is proposed to carry out further development of theoretical approaches and technologies to build an effective syntactic representation of the transformed video frames in the direction of identifying patterns in a compressed chipboard space transforms. Hence the study and creation of technologies for efficient coding syntax transformed video on using the information in the DSS space and defines the purpose of the research article.

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II. Analysis of approaches for efficient coding syntax in EAF space transformants

Consider processing DSS space. Between the components of the vectors of this space, there is a relationship. Firstly, this is due to significant positions of the components in the transformant. The second important component for in connection with the transformation and quantization process is characterized by uneven distribution law values. These properties determine to process EAF space vectors. Here technologies for effective coding syntax are divided into two approaches [3] – [5], [19]:

1. The first approach is to use a static dynamic coding. Accordingly, context modeling used here. However, this approach involves the use of the additional bit cost for the service component representation having information on a component distribution probabilities. The second disadvantage which reduces the efficiency of balancing information is intensity rise time delays in processing associated with the conversion of occurrence probabilities component/

2. The second approach is to use an entropy coding with fixed tables. On the one hand, it reduces the time required for processing. At the same time, on the other hand, reduced adaptability statistical model to dynamically changing characteristics of the system transforms the video stream processing. Accordingly, the length code construction syntactic representation [20].

Hence, entropy coding technology component representation transformants EAF space destabilizes the ratio between intensity information and preserving data integrity. Here, the conditions for the emergence of threats and loss of availability of the integrity of the video data for remote technological solutions of its receipt [16], [23].

One approach to update kernel efficient coding syntax video frames space in a compressed chipboard transformed image is a direction based on the detection of two-dimensional structural constraints on syntactic level description considering storing information integrity [21], [23].

III. Development of the model estimating the information content of a segment of a video in the compressed space of DSS transforms

Formation of an effective syntactic representation transforms Y in the two-dimensional structural space $\{L; Z\}$ required to carry out with the following characteristic differences [11] – [14]:

1. The discrete position p_u dimensional structure of the spectral space (DSS) is formed as a two-dimensional coordinate system $\{L; Z\}$ respectively for the values $l(\tau;\delta)_u$ – long axis insignificant spectral component and $z(\tau;\delta)_u$ – axially significant spectral components.

2. The number of discrete sample space axially Particleboard l and axis z equally U. This value is variable, i.e.

$$U = \text{var}, \qquad (1)$$

in general, it depends on the context of the treated segment of the video frame. Hence, the number of positions in the DSS space will be uneven context-dependent.

3. The two-dimensional structural space $\{L; Z\}$ is sealed by the significant spectral components, i.e. quantity U DSS space position is less than the length of the linearized transformants $Y^{(1)}$, i.e.

$$U < n^2 .$$

4. The maximum values of the elements of the vectors L and Z limited quantities, respectively $d(l;\delta)_\tau$ and $d(z;\delta)_\tau$, i.e.

$$l(\tau;\delta)_u \in [0;\, d(l;\delta)_\tau]$$

and

$$z(\tau;\delta)_u \in [0;\, d(z;\delta)_\tau],$$

where $d(l;\delta)_\tau$. $d(z;\delta)_\tau$ – the maximal values of the elements respectively vector L and Z chipboard space τ the transformants in a choice of quantization strategy parameter δ.

5. From the processing, the position is excluded p_u DSS space coordinates $u=1$ and $u=U$. In this case, the vector $P(U-2)$ discrete positions for which will form an effective intro syntactic representation is formed as follows:

$$P(U-2) = \{ p_2; \dots p_u; \dots p_{U-1} \} .$$

6. A two-dimensional spectral space structural retransform transformants are according to the unidirectionality gradient pixel values change vectors L and Z. In this case, a proportional tendency of change component values vectors L and Z. To this vector elements Z, significant component transformants are placed in reverse order. Retransformation discrete position coordinates p_u Particleboard space is given by the following expression:

$$\tilde{p}_u : \{ l(\tau;\delta)_u;\, z(\tau;\delta)_{U-u+1} \},$$

where $\tilde{p}_u$ – u-th position retransforms discrete DSS space.

Re-transformed vector $\tilde{P}(U-2)$ discrete positions in space chipboard coordinate form take the following form:

$$\widetilde{P}(U-2)=\{\{l(\tau;\delta)_2; z(\tau;\delta)_{U-1}\}; ...$$
$$...\{l(\tau;\delta)_u; z(\tau;\delta)_{U-u+1}\};...\{l(\tau;\delta)_{U-1}; z(\tau;\delta)_2\}\}.$$

Description DSS space coordinate form at discrete positions $\widetilde{p}_u$ It has a number of drawbacks associated with the fact that:

– two values should be used to define a position;

– discrete positions $\widetilde{p}_u$ unequally spaced relation to one another, due to changes non-equalization values between adjacent elements of vectors L and Z. This leads to increased costs as a number of bits to represent the coordinate values themselves and their relative addressing EAF space.

Hence, a separate processing of discrete positions on their coordinates in coordinate form parse presentation is not effective.

It is therefore proposed to form a syntactic representation of an object on principle. In this case, a single code value is generated for the coordinates $\{l(\tau;\delta)_u; z(\tau;\delta)_{U-u+1}\}$ discrete position $\widetilde{p}_u$ DSS space, both for individual objects. These code values are offered call identifiers $I(\tau;\delta)_u$. And correspond to space – space $I(\tau;\delta)$ IDs. Here, the identifier must contain the necessary and sufficient information to obtain all relevant information about the discrete positions.

In this case, two-dimensional structural spectral space $\{L; Z\}$ transformants are replaced with a space $I(\tau;\delta)$ identifiers, i.e $\{L; Z\} \to I(\tau;\delta)$.

For the proposed syntactic representations in the two-dimensional structural space, $\{L; Z\}$ the transformant is a two-dimensional combinatorial object dimension $(2 \times (U-2))$, which one:

1) rows are the permutations with repetition of two elements, the values of which are limited quantities, respectively: $d(l;\delta)_\tau - 1$ and $d(z;\delta)_\tau - 1$. Here $d(l;\delta)_\tau$ and $d(z;\delta)_\tau - 1$ – dynamic quantity values which take the elements of the vectors L and Z for τ-th transformants EAF space;

2) the identifier of the rows, in turn, represent the permutations with repetition of $(U-2)$ elements with the presence of the properties of their pair of inequality and, therefore, characterized by the following limitations:

– the value of the first identificatory $I(\tau;\delta)_1$ it will be limited by the value $(d(l;\delta)_\tau \cdot (d(z;\delta)_\tau - 1)) - 1$, i.e.

$$I(\tau;\delta)_1 \le (d(l;\delta)_\tau \cdot (d(z;\delta)_\tau - 1)) - 1;$$

– the values of all the subsequent IDs $I(\tau;\delta)_u$. $u=\overline{2,U-2}$ They will be limited to the value of $(d(l;\delta)_\tau \cdot (d(z;\delta)_\tau - 1)) - 2$, namely

$$I(\tau;\delta)_u \le (d(l;\delta)_\tau \cdot (d(z;\delta)_\tau - 1)) - 2 \text{ for } u=\overline{2,U-2}.$$

In this case, the information content of an effective syntactic representation τ-th transformants depends on the amount $Q(P;\tau;\delta)_{U-2}$ vectors $P(U-2)$ discrete positions space chipboard, for the components of which are performed limitations asked the following formulas:

a) for the first stage of the lines:

$$l(\tau;\delta)_u \in [0;\, d(l;\delta)_\tau - 1] \text{ where}$$
$$d(l;\delta)_\tau \le n^2 - l(\tau;\delta)_U - 1,\ u=\overline{2,U-1}; \qquad (2)$$

$$z(\tau;\delta)_u \in [1;\, d(z;\delta)_\tau - 1] \text{ where}$$
$$d(z;\delta)_\tau < y(\tau;\delta=0)'_{\max},\ u=\overline{2,U-1}. \qquad (3)$$

b) for the second stage in the column direction by row identifier is:

$$I(\tau;\delta)_1 \in [0;\, (d(l;\delta)_\tau \cdot (d(z;\delta)_\tau - 1)) - 1]; \qquad (4)$$
$$I(\tau;\delta)_u \in [0;\, (d(l;\delta)_\tau \cdot (d(z;\delta)_\tau - 1)) - 2]$$
$$\text{for } u=\overline{2,U-2}. \qquad (5)$$

Here $y(\tau;\delta=0)'_{\max}$ – maximum absolute integer value of the component linearized transformants in the absence of quantization, i.e., $\delta=0$ (without DC-component).

In turn, the number of $Q(P;\tau;\delta)_{U-2}$ vectors discrete positions of particleboard space, for the components which are performed in two stages constraints given by formulas (5) Is determined by the expression:

$$Q(P;\tau;\delta)_{U-2} = (d(l;\delta)_\tau \cdot (d(z;\delta)_\tau - 1)) \cdot$$
$$\cdot ((d(l;\delta)_\tau \cdot (d(z;\delta)_\tau - 1)) - 1)^{U-3}. \qquad (6)$$

Then the value of $R(Y^{(1)}/P;\tau;\delta)_{U-2}$ informativeness effective syntactic representation τ-th transformants EAF space conditions in the presence of conditions paired inequalities identifier values is using the ratio:

$$V(P;\tau;\delta)_{U-2} = \log_2 Q(P;\tau;\delta)_{U-2} = R(Y^{(1)}/P;\tau;\delta)_{U-2}. \qquad (7)$$

The average number $R(Y^{(1)}/P;\tau;\delta)_{U-2}$ redundancy contained in a transformant the linearized $Y^{(1)}$ in case of coding a uniform (without DC-component) relative to the case of its presentation in the form of discrete positions of particleboard vector space with the identification of two-structural constraints, it is determined from the relation:

$$R(Y^{(1)}/P;\tau;\delta)_{U-2} =$$
$$= (1 - \frac{V(P;\tau;\delta)_{U-2}/(U-2)}{(n^2-1)\ell og_2\, z(\tau;\delta)_{\max}/(U-2)})\cdot 100\,\%.$$

Analysis of expression leads to the conclusion that the number of potentially downsized redundancy is increased in cases such as:

– reducing the number of discrete items packed two-dimensional spectral space structure;

– the increase in non-uniformity of distribution of particle board space;

– reducing the number of dynamic values which take the elements of the vectors L and Z chipboard space;

– the condition of having a pair of inequality identifiers positions DSS space.

Estimate of $R(Y^{(1)}/P;\tau;\delta)_{U-2}$ depending on the degree of saturation of original video frame segment, as shown on diagrams Fig. 1.

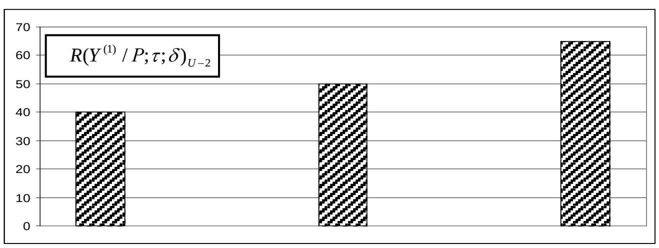

Fig. 1. Diagram of the dependence of $R(Y^{(1)}/P;\tau;\delta)_{U-2}$ the degree of saturation of the video segment

As follows from the diagrams analysis Fig. 1 amount of redundancy downsized varies on the average from 50 to 75% depending on the degree of saturation of a video segment. Increasing the amount of redundancy downsized potentially corresponds to the case of video processing comprising a minor amount of detail. This is achieved by reducing the length of the vector space discrete positions of particleboard.

IV. WORKING METHOD FOR EFFECTIVELY CODING A VIDEO FRAME SYNTACTIC SEGMENT BASED ON THE IDENTIFICATION CHIPBOARD SPACE

Consider the study process and formation of functional transform $F(I)$ translation chipboard space transform into a space identifier and vice versa [11].

When selecting the functional transformation $F(I)$ The following aspects must be considered:

1) should be provided mutually unique transformation i.e.:

$$\{L;\, Z\} \rightarrow I(\tau;\delta) \text{ and } I(\tau;\delta) \rightarrow \{L;\, Z\};$$

2) a code value $I(\tau;\delta)_u$ to coordinate object $\tilde{p}_u$ should be based on the principle of the block, ie provide building single code value with the absolute coordinate values $\{\ell(\tau;\delta)_u;\, z(\tau;\delta)_{U-u+1}\}$. Otherwise, formation of a code value in the binary representation of the coordinates, i.e. $\{[\ell(\tau;\delta)_u]_2;\, [z(\tau;\delta)_{U-u+1}]_2\}$. It leads to the loss of the regularities identified for component description of transformants;

3) in identifying the discrete retransformed chipboard space necessary to consider the inherent structural and two-stage statistical laws;

4) to identify the need to take into account the construction of structural-combinatorial model for estimating the information content of the two-dimensional spectral space structural transformants;

5) must be provided with additional conditions for identifying patterns in space identifier, i.e. creating additional conditions for improving the effectiveness of intra-syntactic representation transforms in a compressed particle board space.

The coordinate object $\tilde{p}_u$ in accordance with the retransformation has the following properties:

– coordinate values of its components along the axes L and Z have a gradient-pointedness, namely the increase in value $\ell(\tau;\delta)_u$ insignificant component chain length is negotiated with increasing magnitude of significant components $z(\tau;\delta)_{U-u+1}$;

– values of the coordinate components in accordance with the characteristics forming the densified chipboard space limited dynamic number of admissible values, i.e.

$$\ell(\tau;\delta)_u \in [0;\, d(\ell;\delta)_\tau - 1];$$
$$z(\tau;\delta)_{U-u+1} \in [1;\, d(z;\delta)_\tau - 1] \text{ for } u = \overline{2, U-1};$$

– values of coordinate components $\ell(\tau;\delta)_u$ and $z(\tau;\delta)_{U-u+1}$ different characteristic uneven distribution and nonlinear changes of the axes L and Z.

These properties create conditions for the interpretation of the coordinate objects $\tilde{p}_u$ particleboard space as a two-element biadic numbers under gradient unidirectional. In this connection, it is proposed to form identifiers $I(\tau;\delta)_u$ positions $\tilde{p}_u$. As code values biadic numbers under gradient unidirectional.

Such biadic according to the properties of the compressed chipboard space are characterized by two constraints, namely: dynamic quantity values $d(\mathsf{l};\delta)_\tau$ and $d(z;\delta)_\tau - 1$ which respectively receive elements of the vectors L and Z for τ - the transformants.

Then the functional transformation $F(I)$ to identify the coordinate $\tilde{p}_u$ object, i.e.

$$F(I):\{\mathsf{l}(\tau;\delta)_u;\ z(\tau;\delta)_{U-u+1}\} \to I(\tau;\delta)_u,$$

takes the following form:

$$I(\tau;\delta)_u = (\mathsf{l}(\tau;\delta)_u (d(z;\delta)_\tau - 1) + z(\tau;\delta)_{U-u+1}).$$

This expression allows you to build a space $I(\tau;\delta)$ IDs of discrete positions DSS space under a gradient of one-pointedness. The result is a vector $I(\tau;\delta)$ its constituents, i.e. $I(\tau;\delta)=\{I(\tau;\delta)_2;...I(\tau;\delta)_u;...I(\tau;\delta)_{U-1}\}$.

Consider creating an effective syntactic representation sequence $I(\tau;\delta)$ IDs coordinate objects DSS space.

We introduce the concept of syndrome $S(\tau;\delta)$ which allows for the development of technologies for efficient syntactic coding vector identifiers ADI space consider the sequence $I(\tau;\delta)$ in terms of having hard disparities between pairs of its components, i.e. $I(\tau;\delta)_u \neq I(\tau;\delta)_{u+1}$ for $u=\overline{2,U-1}$. The remaining cases are marked with the corresponding value of the element $s(\tau;\delta)_u$ syndrome.

In this case, the vector $I(\tau;\delta)$ IDs without considering restrictions will be replaced by two vectors, namely vector $\hat{I}(\tau;\delta)$ identifiers under restrictions on inequality paired elements and corresponding syndrom $S(\tau;\delta)$, i.e.:

$$I(\tau;\delta) \xrightarrow{\varphi_s} \{\hat{I}(\tau;\delta); S(\tau;\delta)\}.$$

Where φ_s – the functional identification of the conditions of inequality for the adjacent (paired) identifiers.

This makes it possible to give the following sequence of interpretation $\hat{I}(\tau;\delta)$.

Definition. Vector $\hat{I}(\tau;\delta)$ identifiers under restrictions on inequality paired elements are called object-dimensional positional number of the base $Q(\tilde{p}_u;\delta)$ for which the elements of the condition of the flexible inequality (with the syndrome paired inequalities $S(\tau;\delta)$).

Consider now the development of an effective process of coding syntax identifier chipboard vector space with the use extra syndrome $S(\tau;\delta)$ object position number in terms of having a flexible inequality its paired elements.

Such a process is proposed to carry out the following process on the basis of the corrections:

1. The first correction relates to the formation of the auxiliary quantity $\theta(\tau;\delta)_u$. Here, for the account of the flexibility of inequality identifiers paired with the elements $s(\tau;\delta)_u$ syndrome $S(\tau;\delta)$ correcting injected auxiliary value $\theta'(\tau;\delta)_u$. Then built next system of formulas:

$$\theta'(\tau;\delta)_u = \begin{cases} \theta(\tau;\delta)_u, & \to\ I(\tau;\delta)_u \neq I(\tau;\delta)_{u+1}; \\ I(\tau;\delta)_u, & \to\ I(\tau;\delta)_u = I(\tau;\delta)_{u+1}. \end{cases}$$

2. The second process is subjected to the correction expression for determining the weighting coefficients. If adjacent IDs $\{I(\tau;\delta)_u;\ I(\tau;\delta)_{u+1}\}$ we are carrying out the condition of equality $I(\tau;\delta)_u = I(\tau;\delta)_{u+1}$, the identifier $I(\tau;\delta)_u$ it is interpreted as an element of a one-dimensional position of the object to one basis. Accordingly, its base is equal to the $Q(\tilde{p}_u;\delta)$. In the opposite case, when the pair $\{\hat{I}(\tau;\delta)_u;\ \hat{I}(\tau;\delta)_{u+1}\}$ IDs performed conditional inequality $\hat{I}(\tau;\delta)_u = \hat{I}(\tau;\delta)_{u+1}$, the ID base $\hat{I}(\tau;\delta)_u$ will still $\hat{Q}(\tilde{p}_u;\delta)$:

$$\hat{Q}(\tilde{p}_u;\delta) = (d(\mathsf{l};\delta)_\tau \cdot (d(z;\delta)_\tau - 1)) - 1.$$

Accordingly, the identifier $\hat{I}(\tau;\delta)_u$ it will interpret the dimensional object as an element-positional numbers of one base under conditions inequality paired elements.

In fact, keeping flexibility, availability conditions inequality paired elements leads to the formation of dibasic dimensional object position number based on the availability of flexibility inequality conditions adjacent elements, i.e. taking into account the syndrome.

Definition. Vector $\hat{I}(\tau;\delta)$ identifiers in a flexible overlay inequality constraints on paired elements are called dibasic dimensional object positional number system $\{Q(\tilde{p}_u;\delta);\ \hat{Q}(\tilde{p}_u;\delta)\}$ for which the elements of the condition of the flexible inequality (with the syndrome paired inequalities $S(\tau;\delta)$).

Dibasic system is written as $\{Q(\tilde{p}_u;\delta);\ \hat{Q}(\tilde{p}_u;\delta)\}$. To account for such a particularly efficient encoding process is proposed to introduce an auxiliary value $Q(s(\tau;\delta)_u)$.

Now denote variables ν_u and $\hat{\nu}_u$ as the number of identifiers, the remaining untreated on u-th encoding step and, respectively, for which the condition of equality, i.e. $s(\tau;\delta)_u = 0$ and the condition of inequality, i.e. $s(\tau;\delta)_u = 0$ In addition, the for u-th encoding step following equality: $\nu_u + \hat{\nu}_u = U - u - 1$.

Characterizing the base identifier treated under the presence of the syndrome, such as:

$$Q(s(\tau;\delta)_u) = \begin{cases} \hat{Q}(\tilde{p}_u;\delta) \ \rightarrow \ I(\tau;\delta)_u \neq \\ \neq I(\tau;\delta)_{u+1},\ s(\tau;\delta)_u = 0; \\ Q(\tilde{p}_u;\delta) \ \rightarrow \ I(\tau;\delta)_u = \\ = I(\tau;\delta)_{u+1},\ s(\tau;\delta)_u = 1. \end{cases}$$

Then a weighting factor $Q'(s;\tau;\delta)_{U-u-1}$ auxiliary member $\theta'(\tau;\delta)_u$ with the information on the amount of $s(\tau;\delta)_u$ it will equal

$$Q'(s;\tau;\delta)_{U-u-1} = Q(s(\tau;\delta)_u)^{U-u-1} = \\ = Q(\tilde{p}_u;\delta)^{\nu_u} \cdot \hat{Q}(\tilde{p}_u;\delta)^{\hat{\nu}_u}.$$

Given the technological corrections imposed system ratios for the one-way dibasic object coding in a flexible inequality paired elements take the following form:

$$\hat{E}(s;\tau;\delta) = \sum_{u=2}^{U-1} \theta'(\tau;\delta)_u \, Q'(s;\tau;\delta)_{U-u-1} = \\ = \sum_{u=2}^{U-1} \theta'(\tau;\delta)_u \, Q(\tilde{p}_u;\delta)^{\nu_u} \cdot \hat{Q}(\tilde{p}_u;\delta)^{\hat{\nu}_u}.$$

Here $\hat{E}(s;\tau;\delta)$ – code value dibasic dimensional object position number in a flexible inequality paired elements, i.e. considering syndrome $S(\tau;\delta)$.

Thus, the relations created system forms a technological effective core syntactic representation of the video segment on the basis of forming the densified dimensional spectral space with subsequent structural dibasic dimensional object positional identifiers coded in the space under the flexible presence inequality paired elements.

V. Conclusion

According to the above, we can conclude that:

1) developed the efficient syntactic representation of transformants based on dimensional object in a position-encoding paired inequalities flexible elements. The basic differences of such a representation are compressed chipboard consideration identifiers vector space as dibasic object position with the additional use of a syndrome presence inequality paired identifiers; integrate two process correction values regarding identifiers and their bases;

2) synthesized ratios system forming the core technology effective syntactic representation of the video segment on the basis of forming the densified dimensional spectral space with subsequent structural dibasic dimensional object positional identifiers coded in the space under the flexible presence inequality paired elements; classification of pairs of identifiers compressed particle board space by the presence of the conditions of inequality and comparing the result of monotony.

Scientific novelty. For the first time developed a method for encoding frames video information stream on the basis of their transformation and reduction intraframe redundancy. Characteristic differences created by other method are as follows: forming code identifier of points in two-dimensional space structurally biadic transformants based on the principle in a gradient unidirectional; construct a two-dimensional block code identifies structural space on the basis of positional one base adaptive coding considering paired inequalities flexible elements. This reduces the bit rate of the video stream in terms of reliability for predetermined energy effective onboard communication technologies.

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