

METHOD FOR DETERMINING THE FRACTAL PROPERTIES OF TEXTUAL INFORMATION FOR THE PRESENCE OF INFORMATIONAL IMPACT

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Abstract - Analysis of modern interstate conflicts, trends in the development of forms of warfare. It is shown that the opposition is characterized by various forms, is hidden in nature and is carried out mainly in the political, economic, informational and other spheres. It is proved that a significant part of the hybrid wars are informational and informational and psychological operations used for the purpose of a destructive impact on society using information and communication space and technology. The article expresses the need to use the method of the fractal properties of the text to counter the hidden informational and informational and psychological effects, as an integral part of the national security of the state.

Keywords - automation, psychological operations, information security, manipulation.

I. Introduction

Recently, a significant increase in the role of negative information influence in the achievement of economic, political and military goals by the aggressor States has become evident. At the same time, the active development of information technologies has led to a qualitative understanding of the role and place of information impact in the system of information and cyber security of the state. The aggression of the Russian Federation and other fundamental changes in the external and internal security environment create prerequisites for further intensification of such a negative phenomenon as cybercrime. Therefore, countering it, including in the form of countering information threats in cyberspace, is an actual scientific and applied task [1].

The present moment is characterized by the strengthening of the role of information security as a key component in the system of national security of the state. Article 17 of the Constitution States that "... provision. ... information security is the most important functions of the state, the business of the Ukrainian people." However, the level of development of information security does not fully meet the needs of society and the state. One of the factors influencing this is the lack of development of scientific and methodological base of information security".

Information struggle is a complex of measures of influence and protection of information security objects. One of them is information and psychological warfare. The priority in ensuring information and psychological struggle is " the establishment of methodological foundations and mechanisms of neutralization of information and psychological effects against the state."

This problem becomes urgent also because the States adjacent to Ukraine dynamically develop structures for carrying out information and psychological confrontation which are carried out for the purpose of manipulation by mass consciousness with use of all types of information and psychological influences, including and on subconscious of the person [2]. Today, the concept of "manipulation of consciousness" implies the introduction into the consciousness of ideas, thoughts and ideas through the dissemination of specially prepared form and content of information. The manipulation of the consciousness of its widespread acquired not only and not so much in the military sphere, but also in politics and Economics (advertising and services). Manipulation of consciousness is also used in the education and pre-school education of children. It can have both positive and negative consequences and be aimed at the conscious

and subconscious sphere of a person. Since manipulation is a kind of spiritual and psychological impact, the target of which is the human psyche, then to succeed, manipulation must remain unnoticed. Success is guaranteed when the object of manipulation believes that everything that happens is natural and inevitable, and the fact of manipulation is not reflected in his memory.

This influence on the subconscious mind requires considerable skill and knowledge. Since the manipulation of public consciousness has become a technology, there are professional workers who own this technology or part of it, who treat people not as individuals, but as an object, a special kind of things. With the increase in the amount of information for the implementation of suggestive impact and counter it requires a large number of specialists and automation of processes to improve efficiency.

Hence, the actual scientific and applied task is the automated detection of suggestive effects on the human subconscious in the text information, the neutralization of such negative actions and the possibility of compiling information materials with a given type of suggestion action.

II. Method of analysis based on semantic differential

Influence of the text, among other things, is determined by the special order of its elements, similar in some respects to the structure of the fractal.

Such organization ensures the "naturalness" of perception and improves the effectiveness of suggestion. Consider the text as a linear expansion in time of a sequence of phonetic units (sound bubbles), each of which can be encoded by an integer positive number.

To convert a text into a numerical row and its subsequent computer analysis, the character codes defined by the ASCII or Unicode standard can be used.

Let the text be represented as an integer number in length N , we convert it into a time series of length $N-1$, based on the logarithmic relationships:

$$n - \ln \left(\frac{N_{i+1}}{N_i} \right), i = 1, 2, 3, \dots, N-1, \quad (1)$$

The arithmetic mean for the specified number is calculated by the formula:

$$M_k = \frac{1}{k} \times \sum_{i=1}^k n_i \quad (2)$$

And the accumulation of deviations:

$$D_{k,n} = \sum_{i=1}^k (n_j - M_k), k = 1, 2, \dots, i \quad (3)$$

Then the magnitude of the scale is determined by:

$$R_k = \max(D_{k,n}) - \min(D_{k,n}), k \leq n \quad (4)$$

And the arithmetic mean deviation:

$$S_k = \sqrt{\frac{1}{n} \sum_{j=1}^k (n_j - m_k)^2} \quad (5)$$

After that, each range R_k is normalized by dividing by the corresponding value S_k . The Hurst index is a tangent of the angle of inclination on the dependency graph $\ln \left(\frac{R_k}{S_k} \right)$ from $\ln(n)$.

For texts aimed at giving suggestions, the value of the Hurst index is in the range $0 \leq H \leq 0.5$, which corresponds to the anti-span series.

For neutral texts of informational content, the value of estimating the Hurst index is $0.5 \geq H \geq 1$.

The conducted experimental studies on large text selections allowed to formulate a decisive rule for determining the membership of the analyzed text to a class of potentially dangerous information in the following form:

$$U = \begin{cases} 1, & \text{if } 0 \leq H \leq 0.49 \\ 0, & \text{if } 0.49 \leq H \leq 1 \end{cases}, \quad (6)$$

H – Hurst score estimation.

III. Conclusions

The presented method can be used to solve a wide range of tasks in order to identify the influence of information with the implementation of this method in the information processing systems.

Using the presented method in the software part of the filters will increase the level of information security of the state in the information system by 37% without losing bandwidth, thereby increasing the amount of information by 18%.

IV. References

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