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SOFTWARE FOR DIGITAL SIGNAL INTEGRITY VERIFICATION

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I. Formulation of the problem

In modern conditions of creation, storage and transmission of information in electronic form there is a possibility of unauthorized access or modification of digital signals, including digital audio [1]. In this regard, the task of checking the integrity of the digital signal is an urgent, but unresolved, problem.

II. The purpose of the work

The purpose of the scientific research is the software implementation of the method of color detection and localization of falsification of digital audio signal stored in the format with loss of information.

III. Software implementation of digital signal integrity verification method

The method of analysis of the detection of falsification in some parts of the digital image was carried out visually, which did not allow to automate the work of the program. Therefore, one of the tasks is to determine the parameter for separating the falsified part of the audio signal from the original parts.

As a parameter, it is suggested to use the maximum deviation value of the first derivative of each approximating line from the others in the sub-block of signal. The absolute value of such a parameter for all sub-blocks may differ from signal to signal. Therefore, it is proposed to use the relative value of this parameter [2]. Using a conceptual diagram (use case diagram), we depict the actors (persons who have access to the function of the program) and the functions of the future software product themselves (see fig.1).
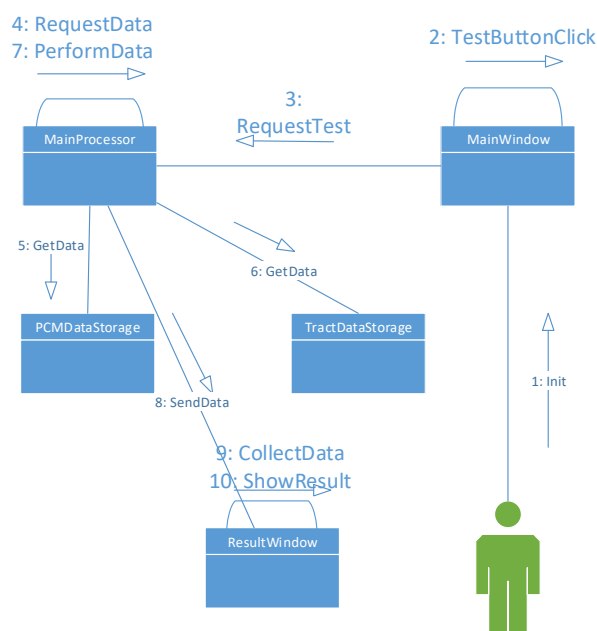

Figure 1 – Use case diagram

A MATLAB and using the .NET modules application suite was selected to implement the software.

Conclusion

Thus, the use of the developed TestAudio software in practice for any enterprise allows to detect the presence or absence of falsification of digital audio signal without the involvement of freelance highly qualified specialists in this process, which ultimately leads to saving of money while maintaining the reliability of the analysis results.

Reference

1. Kevorkova Zh.A. Economic Expertise: Lecture Course Tutorial / Zh.A. Kevorkova. – M. «Prospekt», –2017. – 253 p.
2. Manipulation of financial statements - schemes and methods for identifying [Access mode]: – https://fd.ru/articles/37006-Economic expertise of the financial reporting reliability