

USING THE BASIC SPEECH SIGNALS TO CREATE SPEECH-LIKE NOISE

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Protection of speech information from leakage through technical channels is one of the main tasks when providing a set of measures for information security of a dedicated room [1, 2]. To solve it, both passive and active methods of protecting information are used. In the case of active methods of protecting speech information, vibration and acoustic masking noises are used, created by noise generators and various types of vibration emitters. Speech noise generated from speech signals is also an effective technique.

The paper considers an algorithm for the formation of speech-like noise using the synthesis of sound signals by random sampling of speech elements from the generated database. In this case, the task of separating the noise from the useful signal becomes more difficult compared to ordinary noise. Therefore, the use of speech-like noise makes it possible to increase the overall stability of the speech information protection system in a dedicated room. Studies have shown that the most effective interference type “speech chorus”.

The formation of speech-like noise took place in several stages. At the first stage, a speech array was created, including a set of Russian words and containing selected allophones. The input data for the synthesis and subsequent allophonic marking of the speech signal was an audio text array and a formed phonetic-acoustic database. After synthesis, the speech signal is used for segmentation and allophone marking of the natural speech signal. One of the stages was listening to the speech signal with the possible manual adjustment of the boundaries of the allophones. After compiling a database of allophones, software was used, which accepts an array of created files as input. Then the synthesis and reproduction of the input text took place using the recorded allophones. The “speech chorus” noise was formed similarly to the speech-like noise with the overlapping of the voices of several speakers at the same time.

References

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