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Heydər Əliyevin anadan olmasının 90 illik yubileyinə həsr olunmuş
Beynəlxalq konfransın
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On actual problems of mathematics and informatics
ABSTRACTS

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90-th anniversary of Haydar Aliyev

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ТЕЗИСЫ

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WAVELET DATA PROCESSING IN GEOPHYSICAL WELL TEST

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We describe the mathematical formulation of the problem arrangement bed boundaries. Let $f : [a, b] \rightarrow R$, where $0 < a < b$ – continuous function of the signal and $c : [0, \dots, N] \subset N \rightarrow R$ – a discrete version, which is defined as: $c(0) = a$, $c(i) = f(a + ih)$, where $h \in (0, \infty)$ – sampling step, $a + Nh < b$, $a + (N + 1)h \geq b$. Denote $x_i = c(i)$. Partition of depth is the set of points $a = r_0 < r_1 < \dots < r_k = b$, that meets some of the criteria described above. Boundaries r_i correspond to local maxima of the function. In the practical implementation of the algorithm works with discrete values signal calculated difference derivatives.

In this approach, there is a criterion as noisy. In order to prevent what is necessary to filter the data before applying the algorithm which allows to smooth the values.

Filtering is a function

$$f : [x_1, \dots, x_n] \rightarrow [y_1, \dots, y_n],$$

where

$$y = f(x_i) = \sum_{j=-k}^k a_j x_{i+j},$$

where $a_j \in R$, $[x_1, \dots, x_n]$ – vector of log data. The transformation is averaged with weights and to some extent solves the problem of filtering is a function of depth [1].

In order to develop an algorithm that fully addresses all the criteria, it was decided to investigate the signals using the wavelet transform, which can

provide information on both the amplitude and the frequency component of the geophysical signal, and allow flexibility to solve the problem of averaging data.

The wavelet transform of a signal is a function of a certain class in the form of an expansion in the basis of its functions [2].

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MOBILE PLATFORM BASED SOFTWARE SYSTEM FOR AZERBAIJANI TEXT RECOGNITION AND SPEECH SYNTHESIS

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One of the main problems for persons with limited vision is to independently get information as traditional information sources like books, journals are unreachable to them.

Popular non-vision printed sources based on Braille's embossed dot system have certain disadvantages. Those books have bigger size due to embossed print, easily damaged during storage and reading due to physical contact and additionally the quantity of them is much less than common publishing. Additionally, the easiness of getting information is also cannot be compared to a common publishing.

Another popular to get information is so called "audio book", where the texts of books, magazines, newspapers are stored in a musical compact disk or sound file. The advantages of this system are easiness to follow, fast reaction and the speed of the information exchange is sufficiently higher than reading. Despite these advantages, the main disadvantage of audio-books is efficiency problem – only popular publishing and special information are issued in audio format.

The proposed software-device system by us avoids these disadvantages. It consists of mechanical device that fixes the document for reading, camera (mobile phone, scanner) and software application for printed text recognition and speech synthesis. The system is designed for reading and playing of Azerbaijani printed, hand-printed, handwritten texts. The described system operates in a following order: Reading material is fixed in a special place of the device and captured by a special camera. The captured image is sent to the input of the text recognition system. The result of the text recognition is transformed into a speech in a next layer, which also can be saved.

As an initial phase of the recognition process, preliminary processing of the image is performed. It consist of:

- 1) converting to the B/W format;