=Speech Rate Meter=

USER GUIDE

1. Functional purpose

The SpeechRateMeter software module (hereinafter SRM) is designed to measure a complex of characteristics of the tempo (rate) of oral speech. SRM is implemented as a separate application for Windows (7, 8, 10).

The assessment of the complex of characteristics of the rate of speech is carried out by measuring:

• Actual speed of speech (number of words per minute, taking into account the duration of interphrase pauses) - **Speech Rate (wpm)**

• Speech articulation rate (words per minute minus the duration of interphrase pauses) - **Articulation Rate (wpm)**

• Average duration of interphrase pauses - **Phrase Pauses (sec).**

2. Getting started

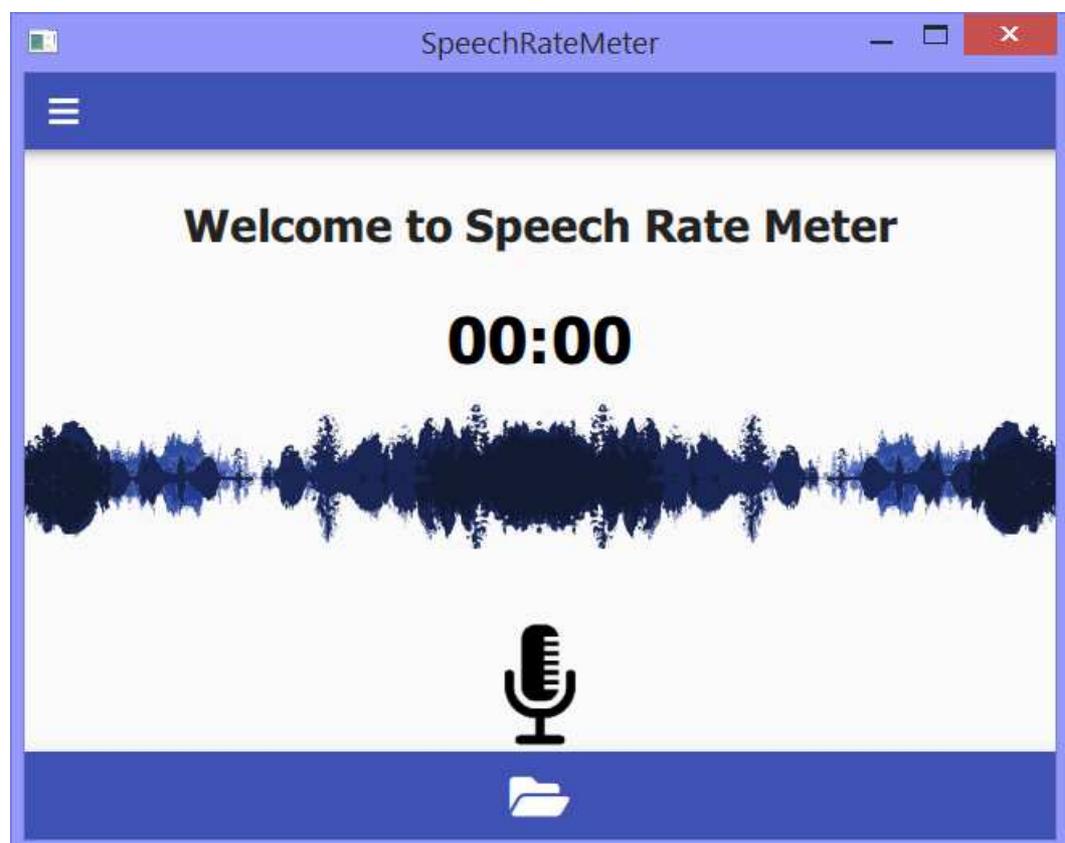The SRM start window that opens after starting the program is shown in Fig. 1.

Fig. 1. SRM start window

Immediately after starting the program, the user is provided with the following two options:

- Recording through a microphone a sufficiently long segment of the analyzed speech (preferably at least 10 seconds);
- Calling one of the previously prepared test audio files stored in the **"data – tests"** folder.

These two options provide for obtaining numerical estimates of the tempo characteristics of the analyzed speech, specified **in Section 1.**

The first option is implemented by clicking on the microphone icon:

and, after the "Record" icon appears:

the input of the spoken speech begins. At the same time, a time counter is initiated, showing the current duration of the spoken speech in seconds:

To finish recording, you need to click the "Record" icon again.

The spoken speech signal is recorded in the "**data - records**" folder and transmitted for further processing, analysis and display of the result.

3. Graphic display of analysis results

After the analyzed speech signal is entered from the microphone or from the **'data - tests**" folder, the complex of tempo characteristics of the spoken speech is calculated. Then the **Operating SRM window** (Fig. 2) is opened to display the calculation results on-screen.

Fig.2 Operating SRM window

In the upper part of the working window, the calculated numerical values of the tempo parameters are displayed: **Speech Rate (wpm), Articulation Rate (wpm), Phrase Pauses (sec),** as well as the duration of the analyzed speech segment - **Speech Duration (sec).**

In the lower part of the window above the semicircle, the **Speech Rate (SR)** and **Articulation Rate (AR)** parameters are graphically shown in the form of two moving arcs of different colors: **blue - SR** and **green - AR**.

The length of these arcs is normalized relative to the user-specified minimum and maximum values. Setting the numerical values Min RS, Max RS is carried out in the Settings section (see Fig. 3).
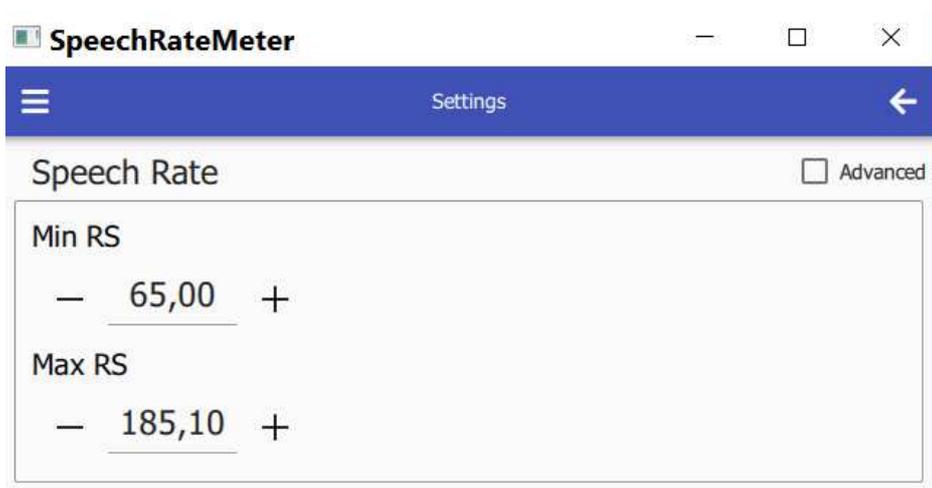

Fig. 3. Fragment of the Settings window

The selection of the minimum and maximum values is determined by the specific conditions of use of the SRM, in which the measured value of the speech rate will be considered **"Slow", "Medium" or "Fast".** The selected **minimum and maximum** of **wpm** values are shown at the ends of the semicircle (see Fig. 2)**.**

You can listen to the speech recorded through the microphone or called from the **"data - tests"** file using the icon:

Internal information used by the developer is displayed by a check mark in the "Advanced" window (see Fig. 3), as well as by the icon::

4. Recording and playback of test audio files

An opportunity for the user to record an unlimited number of speech files from various sources is given, based on his own scientific or practical interests. These files must first be placed in the "data - tests" folder. It should be borne in mind that this version of SRM provides the ability to analyze the tempo characteristics of signals only in the wav, mono, 8 kHz format. All possible other formats should be adapted to this format using suitable software tools (eg Sound Forge).

To call the recorded test files, use the icon:

As examples, 9 samples of natural speech are currently placed in the **"data - tests"** folder, namely:
• Examples (1, 2) - samples of slow and fast speech in English;
• Example (3) - a sample of a weather broadcast in Belarusian;
• Examples (4, 5) - audio recordings of 2 identical fragments of A.P. Chekhov's "*Lady with a Dog*" performed by a teacher of Russian for foreigners and a professional actor;
• Examples (6, 7, 8) - fragments of TV programs in Russian: advertising and monologues of women and men;
• Examples (9, 10) - slow and fast reading of a fragment of a poem in Russian.

5. Recommended areas of use

• Self-study and self-control of the rate of speaking;
• Individual training in improving oral and speech skills in a number of professions such as call center operators, radio, TV announcers, etc.
• Preparing and conducting speeches and presentations;
• Improving reading skills in a foreign language;
• Self-control tool for eliminating speech defects and post-stroke rehabilitation;
• Monitoring of the rate of speech of call-center operators, radio and TV broadcasters.