IntonTrainer

for Russian

(Version: 2023-02-20)

SPEECH INTONATION ANALIZER AND TRAINER

"IntonTrainer–Russian"

(*USER GUIDE)*

1. GENERAL

The <u>software package</u> (hereinafter referred to as the SP) "IntonTrainer-Rus" is designed for analysis, screen display and comparison of the intonation contours of the pitch of the reference and spoken Russian phrases, as well as the numerical assessment of their intonation similarity. The assessment of intonation similarity is carried out on the basis of intonation representation in the form of Universal Melodic Portraits (UMP).

The SP "IntonTrainer" is implemented as a separate application for Windows (7, 8, 10) and it is recommended for use:

• <u>In linguistic education</u>

• <u>For self-learning and self-controlling</u>
(used as a means of intonation training)
Personal training the pronunciation of IC Russian speech: learning Russian as a foreign language, improving oral-speech intonation skills in a number of professions such as call center operators, radio and TV announcers, etc.

• <u>In scientific and practical research</u>
(used as a means of comparing intonation from different sources)
The study of personal, emotional and stylistic features of the intonation. Comparative evaluation of speech intonation in normal and pathological conditions.
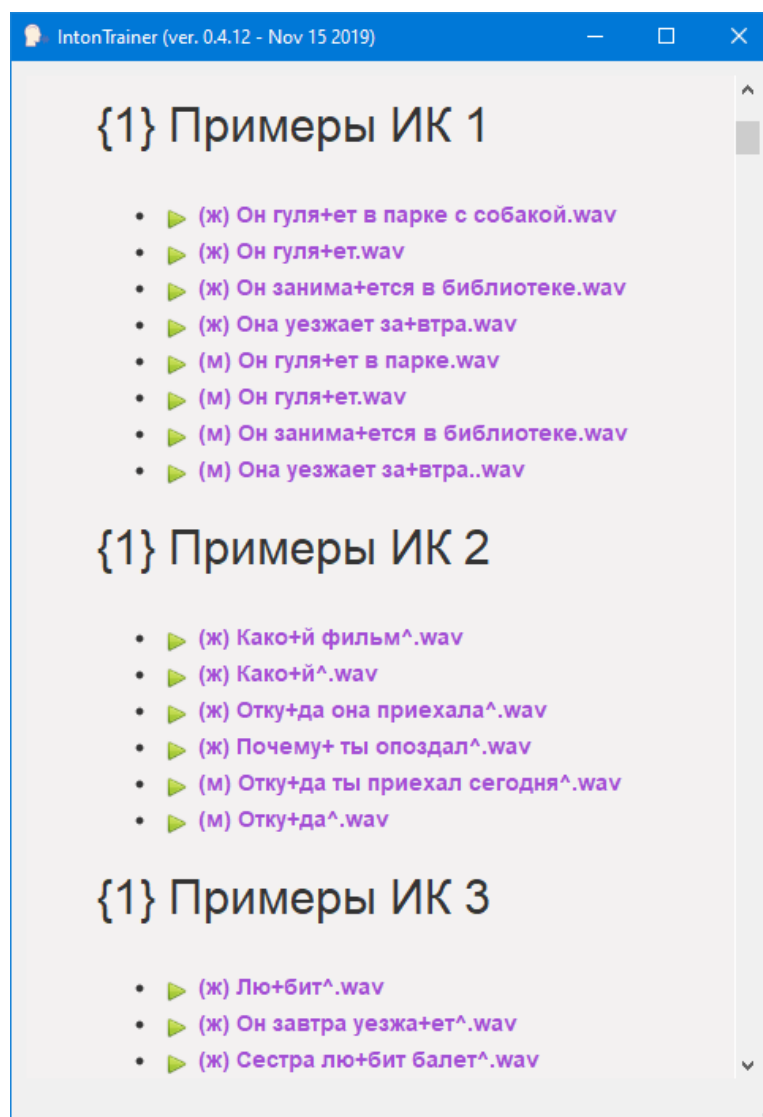
2. Initial mode of viewing the reference phrases

The Initial Window of the SP, which opens after starting the program, is shown in Fig. 1.
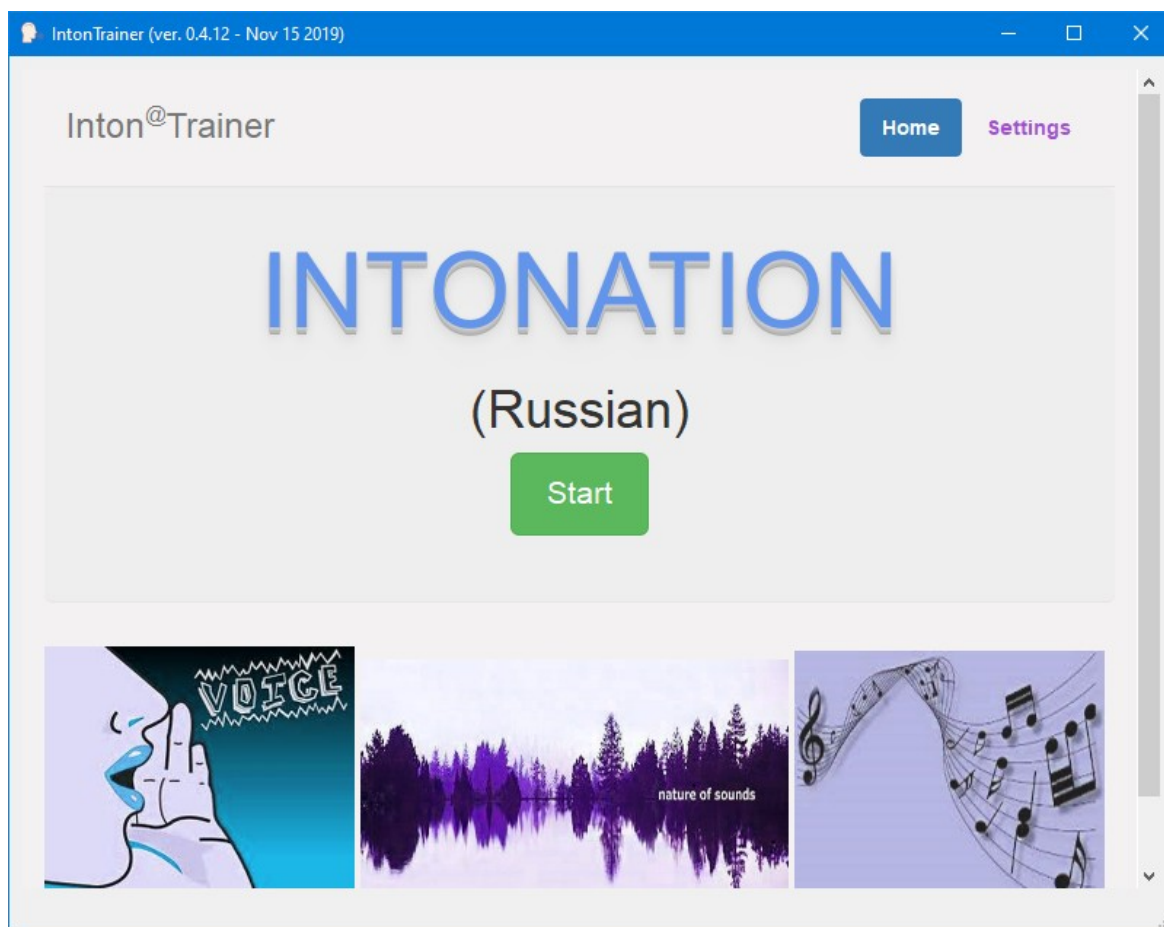
Fig. 1. The Initial Window

When you press the "Start" button, the Information Window opens (Fig. 2), which contains a structured list of texts of reference audio phrases uttered by female and male voices.

Fig. 2. The Information Window

A structured list of texts of reference phrases, spoken by female and male voices, is stored in the "PATTERNS" folder.

The folder contains:
- Basic Intonation Constructions (IC):

IC1 - 8 examples, IC2 - 6, IC3 - 6, IC4 - 4, IC5 - 5, IC6 - 7, IC7 - 4, IC8 - 4 examples;

- Matching pairs IC(1-8) – 29 examples;
- The use of the IC in various situations - 188 examples, including:

IC1 - 16 (4 situations with 4 examples in each situation);
IC2 - 48 (12 situations with 4 examples in each);
IC3 - 36 (9 situations with 4 examples in each);
IC4 - 36 (9 situations with 4 examples in each);
IC5 - 12 (3 situations with 4 examples in each);
IC6 - 20 (5 situations with 4 examples in each);
IC7 - 8 (2 situations with 4 examples in each);
IC8 - 12 (3 situations with 4 examples in each situation);

- An excerpt from the prose of A.P. Chekhov;

3. Pitch viewing of the reference phrases

By scrolling the page of the information window (Fig. 2), the user gets the opportunity of auditory and visual acquaintance with the main intonation structure of Russian speech by selecting the required directory with the cursor.

When you select, for example,
ИК1 *«(ж) Он гуля+ет в парке с собакой»* *("He walks in the park with a dog"),*
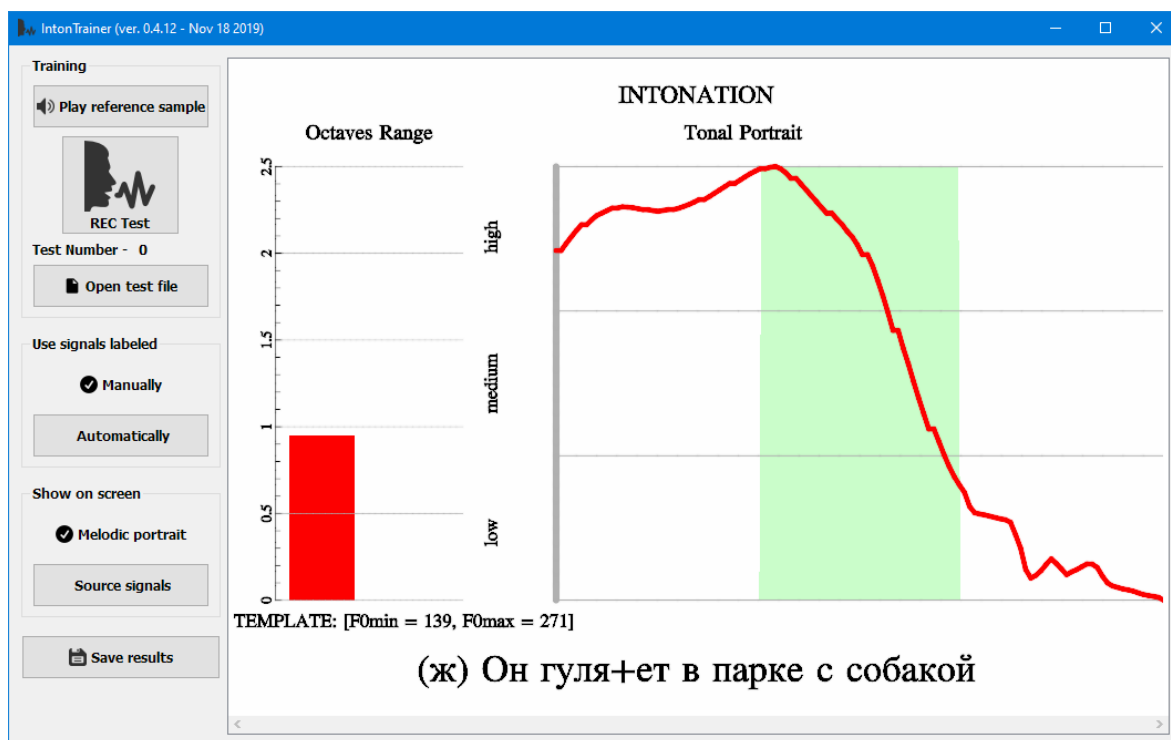the Main SP Window opens (see Fig. 3).

Fig. 3. The Main Window

The left part of the window contains controls that allow listening to the reference speech signal - *Play reference sample*, recording a test phrase by students - *REC Test*, calling pre-prepared test phrases - *Open test file*, as well as setting various modes of graphic display of the analyzed signals and the results of intonation analysis.

In the right part of the window, the results of the analysis of the reference phrase are presented in graphical form, namely:
- The graph showing the pitch changes in a phrase in the form of a *Universal Melody Portrait (UMP)*, consisting of three sections for each word: *pre-nucleus, nucleus and post-nucleus*. The *nucleus* is marked in green.
- Below the graph, the text of the phrase is shown. If a phrase consists of two or more Accent Units (AU) then they separated by a sign (I) in which the nuclear vowels are indicated by the sign "+".
- The red column (to the left of the melodic curve) displays the range of change in the pitch frequency in the phrase, calculated by the formula:
  Octave's Range = (F0max / F0min) - 1.
- Below the Octave Range column, the minimum and maximum values of F0 in Hertz for the selected reference phrase are shown:
  TEMPLATE: [F0min=139, F0max=271].

Figure 4 shows screen shots of reference examples for each of IC1 - IC8 produced by a qualified Russian language teacher.

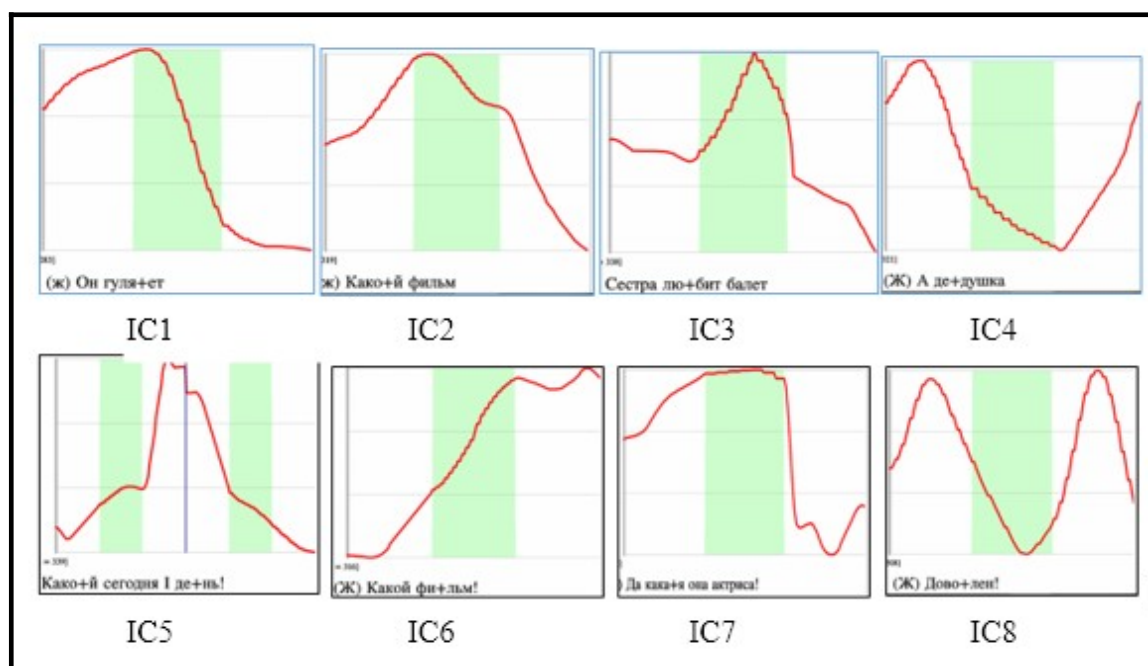The features in the shape of the calculated UMP curves are quite obvious.

Fig. 4. View of the UMP curves calculated for each of IC1 - IC8

4. Comparison of spoken and reference phrases

After the user has listened to and viewed the UMP of the selected phrase, he can use an external or built-in microphone to input a speech signal with his voice. To do this, he must press the "REC Test" button in the left section of the window (see Fig. 3), wait for a short "beep signal" and say the phrase into the microphone, the text of which is indicated at the bottom of the window.

After recording the speech signal, the user will hear the 2nd "beep", and the image in the Main Window (Fig. 3) will be replaced by the image shown in the Main Window (Fig. 5).
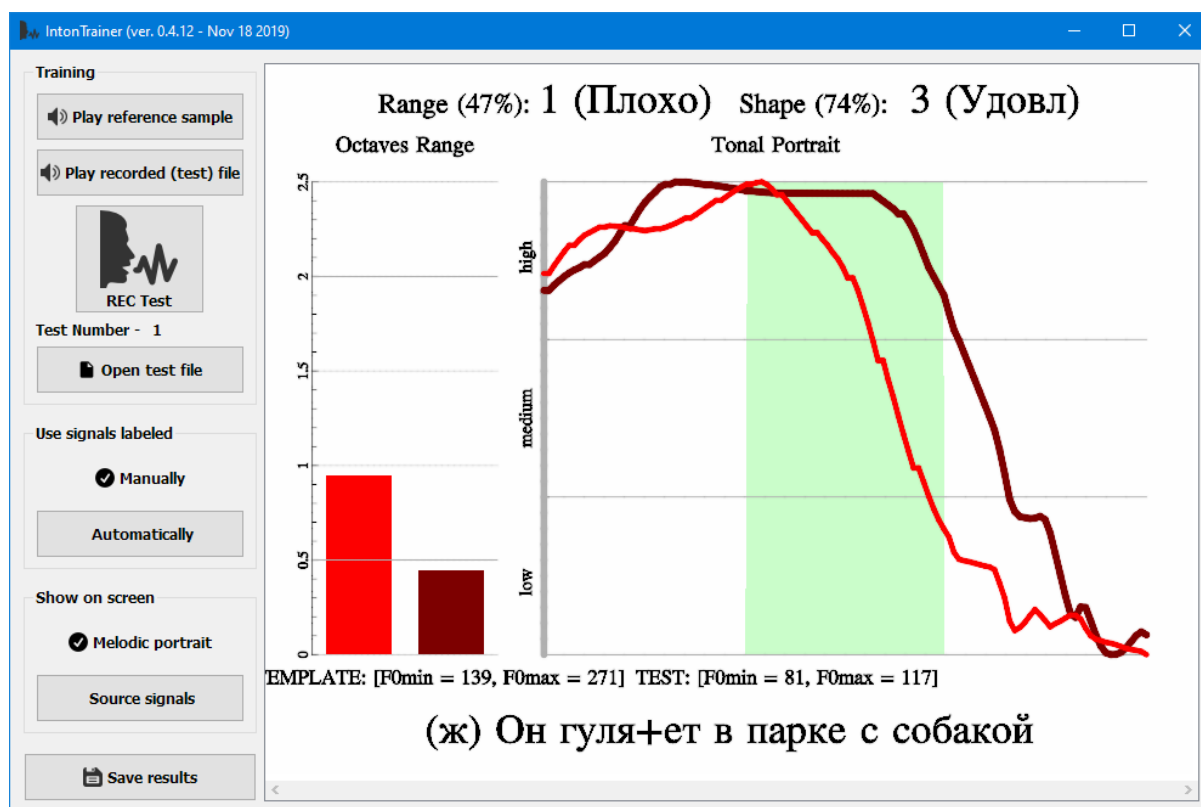
Fig. 5. The Main Window
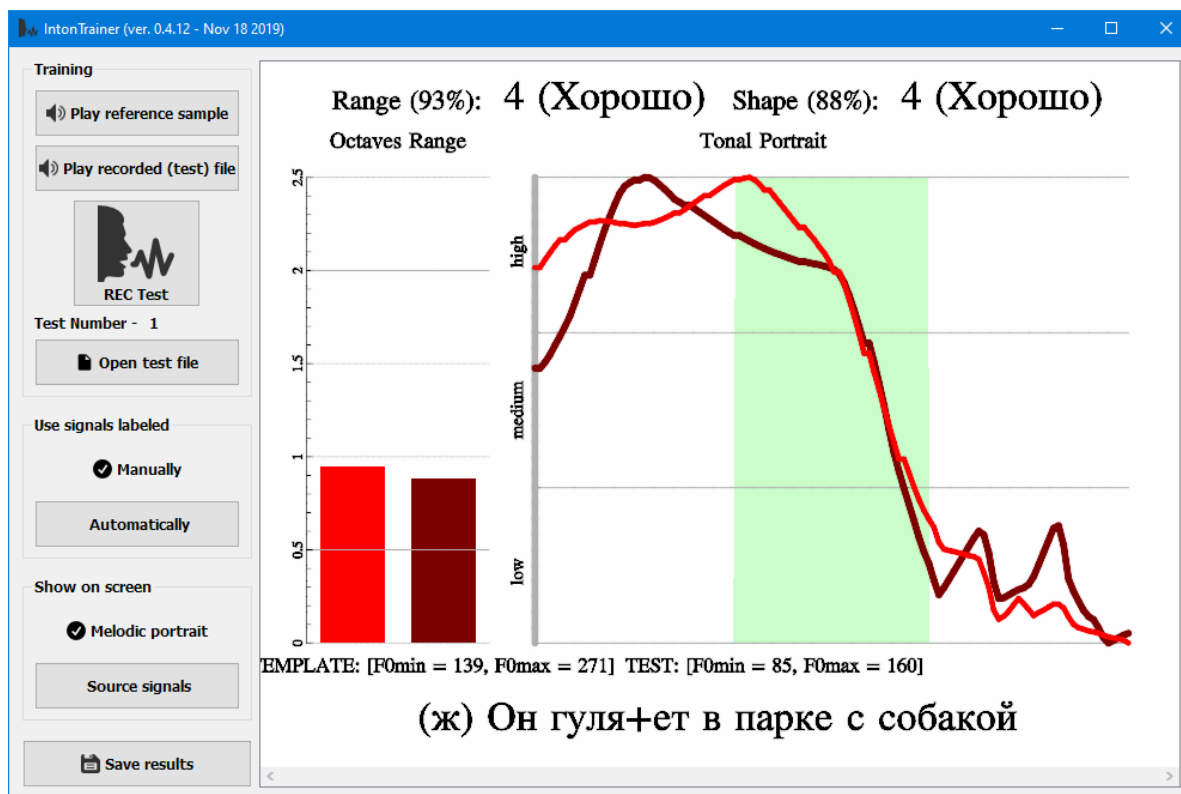*(The result of comparing the UMP of the reference and spoken phrase with IC1)*

Figure 5 shows the results of comparing of the reference phrase: *«(ж) Он гуля+ет в парке с собакой»* (*"He walks in the park with a dog"*) - red line and column on the left and the same phrase pronounced by the student - brown line and column on the left.

The evaluation of the intonational similarity of phrases is carried out according to two main criteria: the degree of similarity of the pitch ranges – Range in percent, and the similarity of the UMP curves - Shape in percent.

The upper part of the window shows the results of comparing the reference and spoken phrases: Range (47%) - similarity in the range of F0(t), and Shape (74%) - similarity in shape of the compared UMP curves. Next to the percentage estimates of proximity are grades according to the 5-point Russian school system.

The student, not satisfied with the result of the test, has the opportunity to repeat the phrase many times, achieving the desired mastery of the skill of correct intonation of each of the selected ICs of Russian speech. On fig. 6 shows the improved results, achieved by the student.

Fig. 6. The Main Window
(The results of re-comparing the UMP of the reference and spoken phrase with IC1)

5. CONCLUSION

The software complex "IntonTrainer" is an open system. Modification of the used settings and audio materials is allowed. Reference databases - PATTERNS - can be supplemented or modified in accordance with the task, or created anew to work with new language applications.

This version of the User's Guide is intended for a wide range of non-computer users. The "Manual" does not describe the numerous settings available to allow an experienced specialist to experiment and improve the technical capabilities of the "IntonTrainer" program.

A much more complete description of the features of the Program can be found on our Website. See: "Advanced User's Guide".

To learn more about the theoretical foundations and code of the SP "IntonTrainer" development see additional information posted on our site https://intontrainer.by/