IntonTrainer

for Singing

(Version: 2023-02-20)

ANALYZER AND TRAINER OF SINGING INTONATION

"IntonTrainer–Singing"

(User Guide)

1

1. GENERAL

IntonTrainer is a <u>software package</u> (SP) for Windows and Linux, designed for training pitch of singing.

Training is based on comparing the melodic portraits of the reference singing exercises and singing by the student.

The system is based on interactive auditory and visual contact with the student, and also provides a quantitative assessment of the fidelity of intonation

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

• In primary vocal education
(used as a means of auditory and visual familiarization with a set of vocal exercises in singing lessons);

• For self-study and self-control
(used as a means of individual vocal training by numerical assessment of the quality of performing a set of vocal exercises)
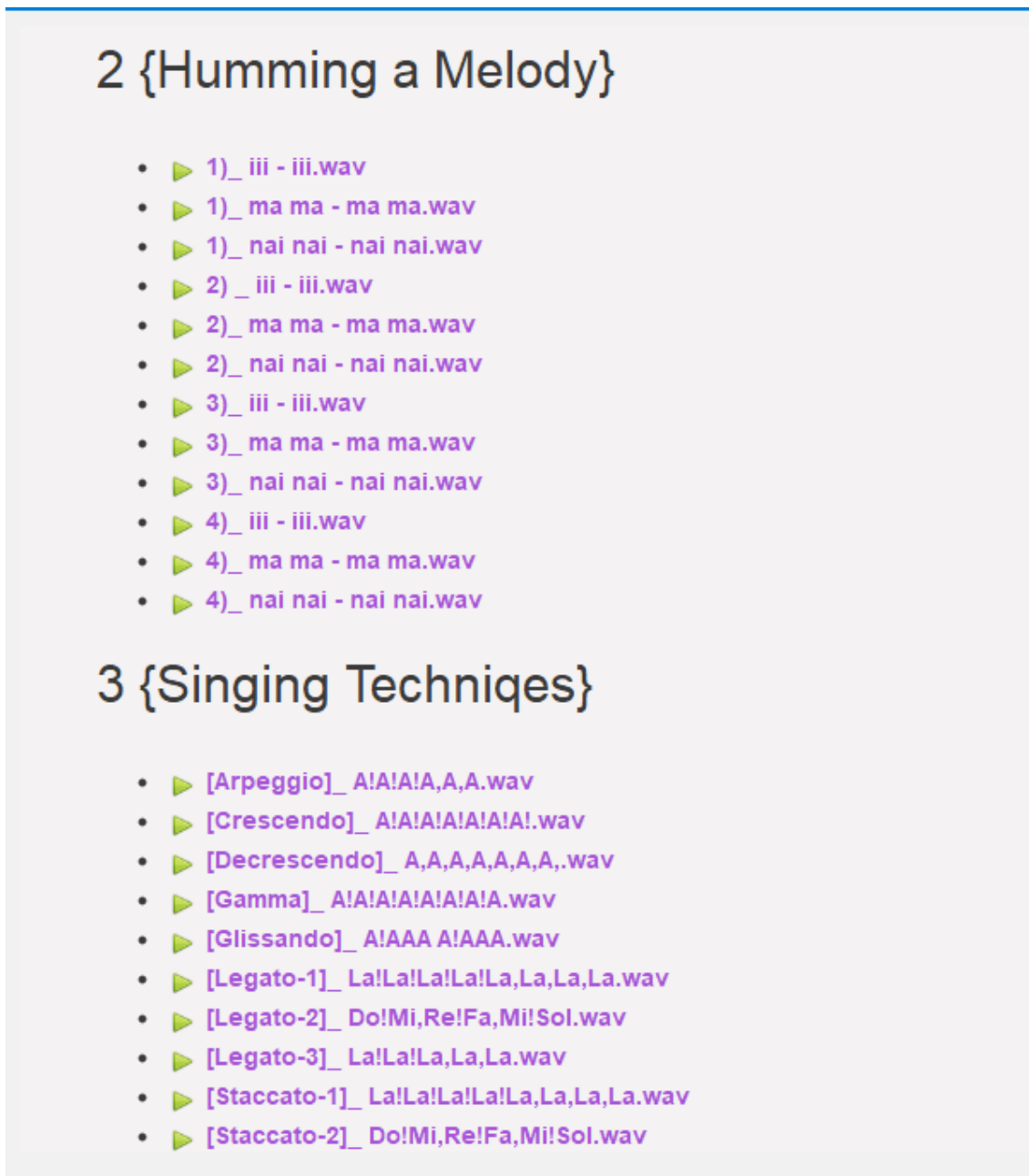
2. Initial mode of viewing the vocal exercises

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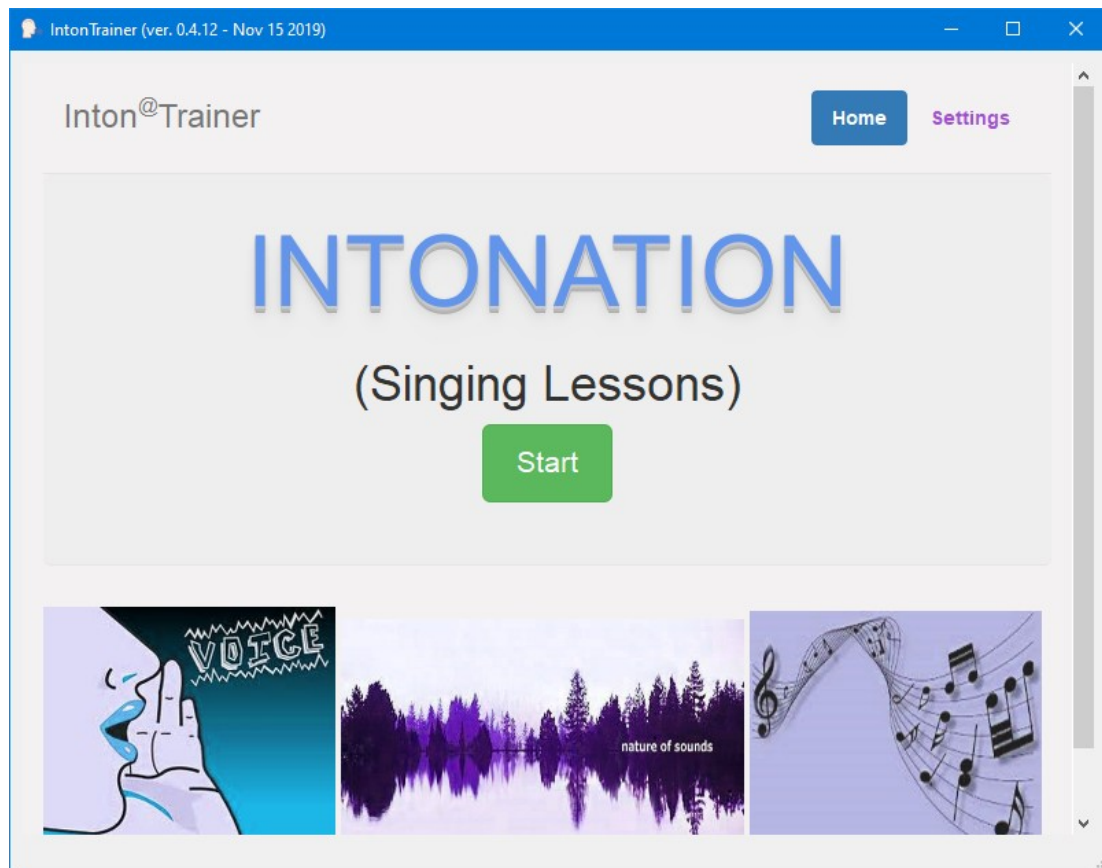
Fig. 1 Initial Window

When you press the "Start" button, the SP the Information Window opens (Fig. 2), which contains a list of vocal exercises in singing lessons.

2 {Humming a Melody}

- ▶ 1)_ iii - iii.wav
- ▶ 1)_ ma ma - ma ma.wav
- ▶ 1)_ nai nai - nai nai.wav
- ▶ 2) _ iii - iii.wav
- ▶ 2)_ ma ma - ma ma.wav
- ▶ 2)_ nai nai - nai nai.wav
- ▶ 3)_ iii - iii.wav
- ▶ 3)_ ma ma - ma ma.wav
- ▶ 3)_ nai nai - nai nai.wav
- ▶ 4)_ iii - iii.wav
- ▶ 4)_ ma ma - ma ma.wav
- ▶ 4)_ nai nai - nai nai.wav

3 {Singing Techniqes}

- ▶ [Arpeggio]_ A!A!A!A,A,A.wav
- ▶ [Crescendo]_ A!A!A!A!A!A!A!.wav
- ▶ [Decrescendo]_ A,A,A,A,A,A,A,.wav
- ▶ [Gamma]_ A!A!A!A!A!A!A!A.wav
- ▶ [Glissando]_ A!AAA A!AAA.wav
- ▶ [Legato-1]_ La!La!La!La!La,La,La,La.wav
- ▶ [Legato-2]_ Do!Mi,Re!Fa,Mi!Sol.wav
- ▶ [Legato-3]_ La!La!La,La,La.wav
- ▶ [Staccato-1]_ La!La!La!La!La,La,La,La.wav
- ▶ [Staccato-2]_ Do!Mi,Re!Fa,Mi!Sol.wav

3

Fig. 2. Information window

The structured vocal exercises are stored in the "PATTERNS" folder. The list of vocal exercises includes

- 9 exercises - {*Voice Warming*};
- 3 groups of exercises (4 in each group) - {*Hamming Melody*},
- 11 exercises – {*Singing TECHNIQES*.

Vocal exercises are presented in the form of sound files performed by experienced singing teachers. The list of exercises given is largely in accordance with the technique of singing in speech position, developed by **Seth Riggs** - a well-known singing teacher.

3. Pitch viewing of the reference exercises

By scrolling the page of the information window (Fig. 2), the user gets the opportunity to hear and visually familiarize himself with various vocal exercises by selecting the required directory with the cursor, for example:

Singing TECHNIQES [Staccato-1_ La!La!La!La!La,La,La,La

As a result of this choice, the **Main window** of the program opens (see Fig. 3).
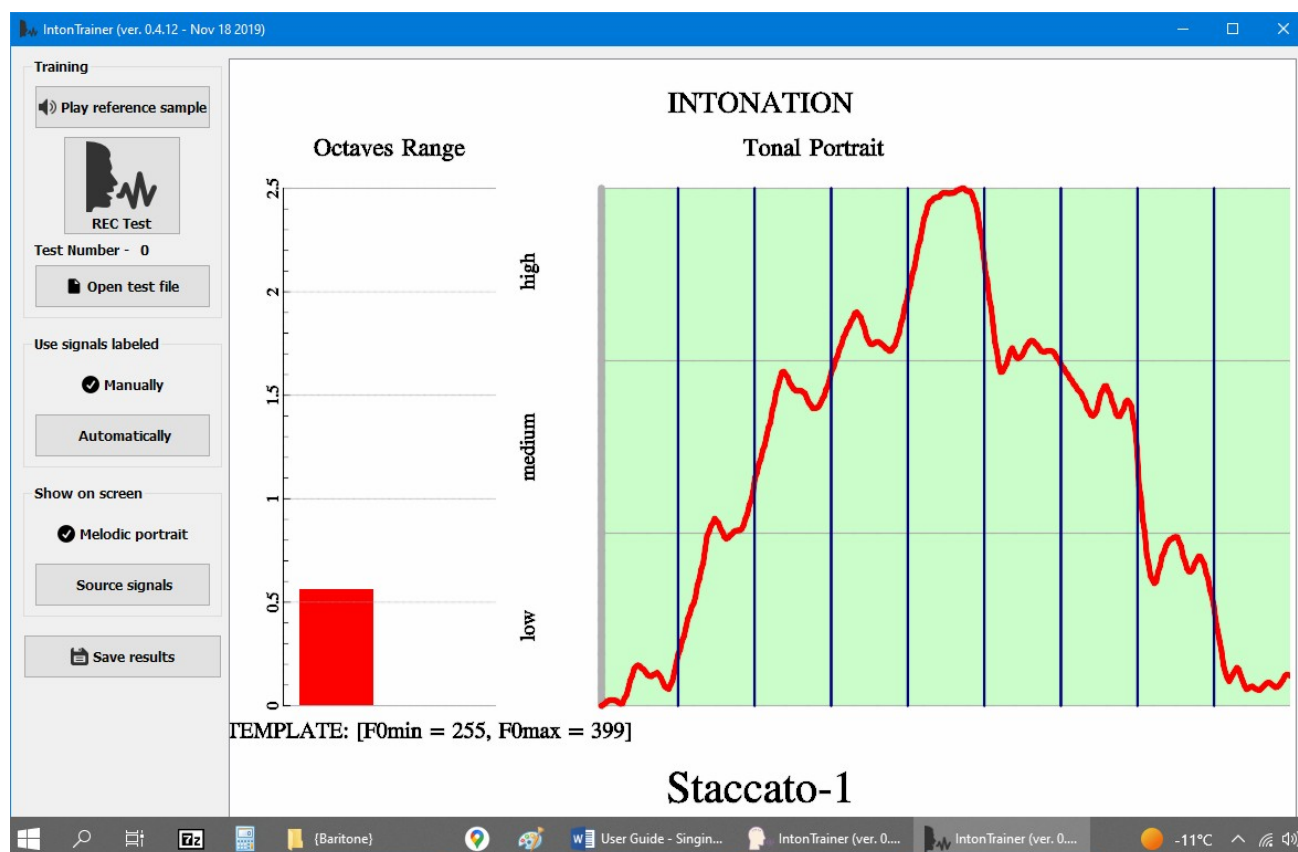
Fig. 3 The Main window

The control buttons are concentrated in the left part of the window, allowing you to listen to the speech signal by pressing the "**Play reference sample**" button.

In the right part of the window, the **Tonal Portrait (TP)** is presented in a graphical form as a result of the analysis of changes in the fundamental tone frequency - F0 of the vocal exercise.

At the bottom, under the graph of the TP curve, are the minimum and maximum values of F0 in Hertz, as well as the name of the vocal exercise.

The red column (to the left of the melodic curve) displays **the range** of fundamental tone frequency change - F0, expressed in octaves according to the formula:

Octave's Range = (F0max / F0min) - 1.

4. Comparison of singing and reference exercise pitches

After the user has listened to the selected vocal exercise, 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" and repeat the vocal exercise heard as accurately as possible.

After recording and processing by the program the entered singing, the user will hear the 2nd "beep" signal, and the image in the right section of the window (Fig. 3) will be replaced by the image shown in Fig. 4.
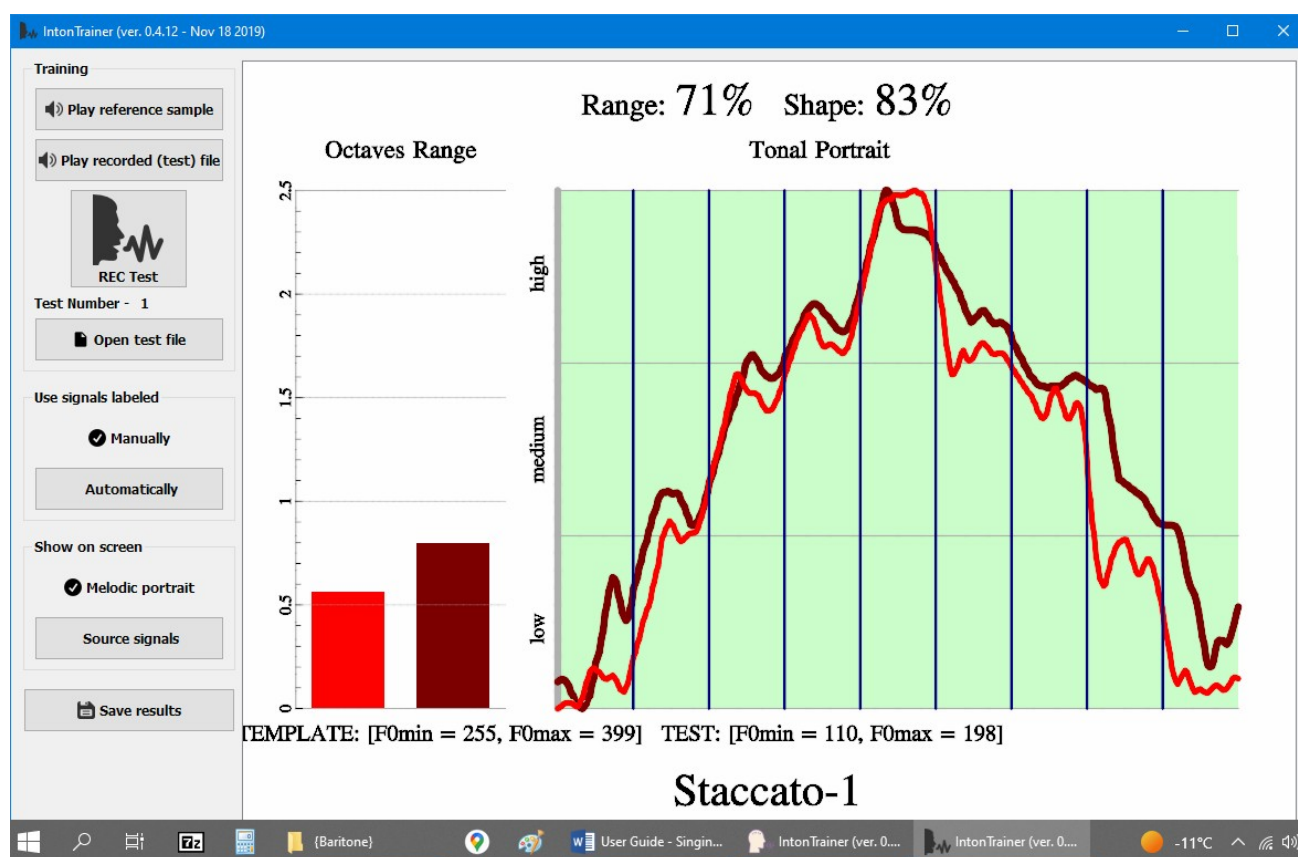
Fig. 4. The Main Window
(The result of pitch comparing of the reference and singing)

On fig. 4 on the left, the red column represents the **F0 range** of the reference song, and the brown column represents the user's sung F0.

On the right, **the graph of the pitches** of the reference singing is displayed in red, and brown is the one sung by the user.

Below the graphs are the minimum and maximum F0 values of the reference and the user's singing.

The upper part of the window shows the results of comparing the reference and spoken phrases: **Range (71%)** - similarity in the ranges and **Shape (83%)** - similarity in shape of the compared curves.

Listening to the selected reference singing is carried out by pressing the "**Play reference sample**" buttons, and the user singing - **"Play recorded (test) file"**, located in the upper part of the left section of the main window (Fig. 4).

The goal of the user's lessons is to achieve 100% success in **both Range and Shape** by repeating the exercises multiple times.

2. CONCLUSION

This version of the **"User's Guide"** is intended for a wide range of teachers and singing enthusiasts who are not experts in the field of computers.

For this reason, the "Manual" does not describe the numerous settings available that 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 Site in the "**Advanced User 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/

6