EARFISH Head tracker App

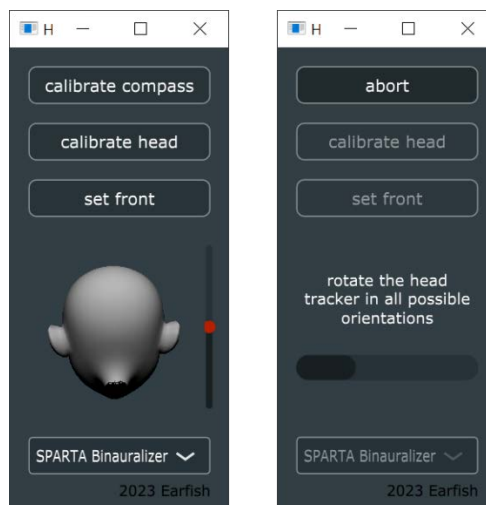www.earfish.eu

I INTRODUCTION

This manual describes how to use the head-tracker app for Windows.

II PREPARATION

- Download and unzip the EarfishHeadTrackerWin.zip file. This file contains two files. Store them in the same directory, e.g. in C:\Program Files\EarfishHeadTracker
- Connect the head tracker to your headphones e.g. using a rubber band.
- Connect the head tracker to the pc via the cable.
- Run the executable.

III RUNNING THE APP

If all goes well, if you start the app, you'll see an animation of a head. This animation is not tracking year head correctly, because it needs calibration.
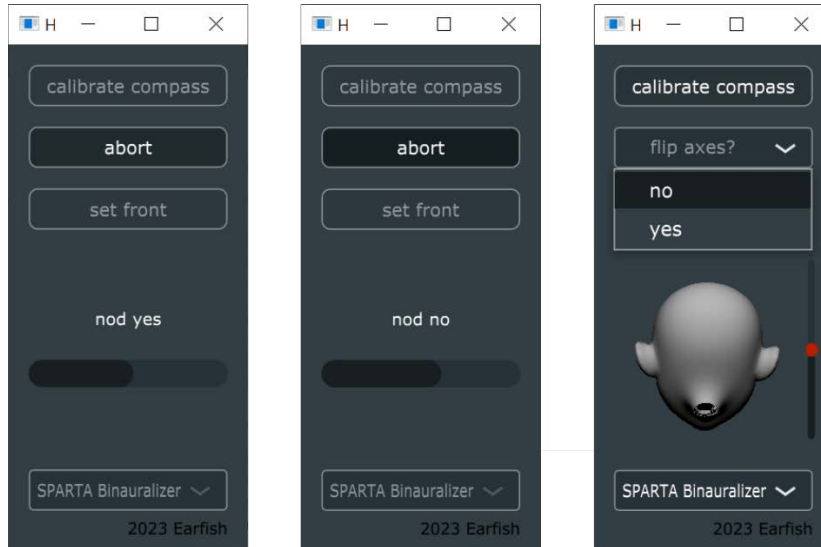

Calibrate compass

Calibrate compass

The head tracker uses the earth magnetic field to keep track of your head motion. As its strength and inclination depends on the location on earth (and the room you're in, etc.), you'll have to calibrate the compass. To this end, you'll have to rotate the head phones with the head tracker in all possible orientations for 30 seconds. Note that the drivers of your headphones have two strong magnets, and their fields may disrupt proper head tracking. Therefore, to minimize the effects of these magnets, it is advised that you do the calibration of the head tracker while you are wearing the head phones (hence rotate your head in all possible

orientations). This way, one can compensate for the magnetic stray fields from the headphone magnets.

The compass calibration is stored, so if you use the same head phones at the same spot, most likely, you won't have to do the calibration every time, but only once in a while.

Calibrate head

Calibrate head

For optimal head-tracked audio, it is pivotal that the exact orientation of the head tracker relative to your head is known. In order to determine this orientation, you press the calibrate head button. First you'll be asked to nod your head as if saying yes (to determine your interaural axis), next you'll have to nod as if saying no (to determine the vertical axis of your head). In a last step, you'll be asked whether the interaural axis should be flipped. To answer this question, you have to move your head around and check if the animated head is tracking your head correctly, if it is, press no, if it is not, press yes. If all went well, the animated head should now track your head correctly.
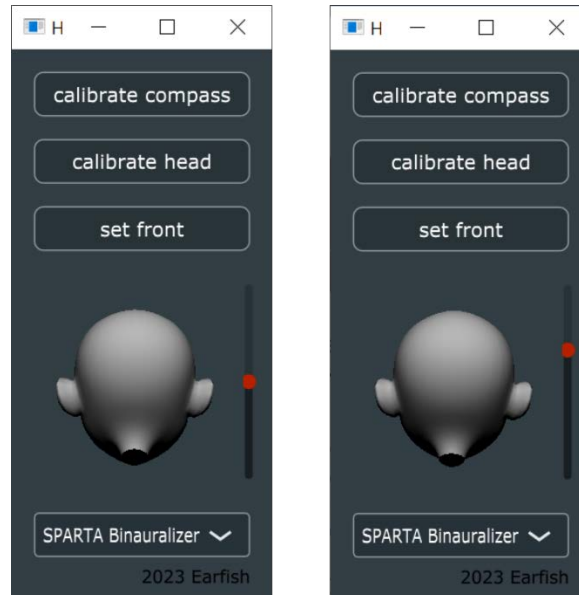
This head calibration is also stored so that you have to do the calibration only once, that is, as long as you place the headphones in exactly the same way as before.

Slider

The slider next to the animated head allows you to manually adapt the pitch angle of your head. This may come in handy to align your HRTF precisely to your head. Note that the HRTFs are measured with a rather arbitrary frontal direction, hence, using this slider you can rotate the HRTF around the interaural axis such that the world frontal direction (sound source in front) appears exactly in the front.

Set front

With this button you define the world reference frame. If you press this button, the world is rotated such that It matches your head orientation at the instant you pressed the button: the x-axis is set as the (horizontal projection of the) interaural axis, the y-axis is set as the (horizontal projection of the) direction that you are, and the z-axis always remains the vertical axis.

Use slider to manually alter pitch orientation

Different output formats

Finally, from the drop-down menu below you can select with plugin you want to connect with. The format of the OSC messages, along with the default port used by these plugins, are defined in the presets.xml file.

IV POSSIBLE PROBLEMS

The head tracker app is working properly, but cannot connect to the plugin.

This is likely due to the Windows Firewall that is blocking the OSC port. In order to solve this issue, take the following steps in order to allow the executable to connect with any of the ports:

- Open the 'Defender Firewall with Advanced Security'
- Select Inbound Rules
- On the right, select 'New Rule…'
- What type of rule would you like to create? -> select Program
- Program:
  - This program path: browse to and select the stored executable EarfishHeadTrackerWin.exe
- Action:
  - Check Allow the connection
  - If asked for protocol type, choose ANY or UDP
- Profile: Check Domain/Private/Public

- Name: EarfishHeadTrackerWin
- Apply
- Possibly you'll have to reboot.