

MANIFIT user guide
Sample application of the audio pitch
converter module
〈 p_shifter.cpp 〉

Kaoru Ashihara

November 4, 2021

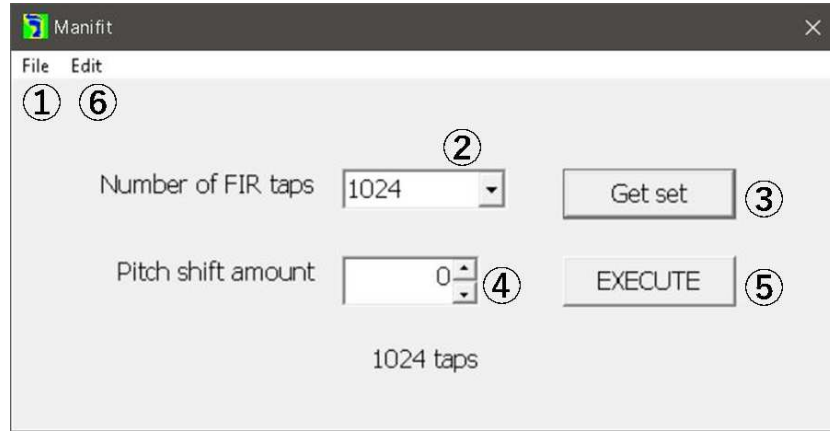


Fig. 1: Main window

The main window of ‘manifit.exe’ has ‘File menu,’ ‘Edit menu,’ ‘Get set button,’ ‘EXECUTE / STOP button,’ a dropdown list and a spin control.

1 Preface

‘Manifit’ is the realtime audio pitch converter. By using ‘manifit.exe,’ you can manipulate the pitch of the sound during reproducing a WAV file. The pitch of the sound can be converted in semitone steps between -36 semitones and 36 semitones. The controllable range of the pitch is as wide as 6 octaves overall.

‘Manifit’ is a sample project to show how to use the audio pitch converter module ‘p_shifter.cpp.’ The pitch conversion is done by convolution of a time-varying FIR filter with the audio data. The generation and convolution of the time-varying filter are executed in ‘p_shifter.cpp.’ The C++ program ‘p_shifter.cpp’ is open source under the [MIT license](#).

‘Manifit’ is assumed to be built (compiled) in Visual Studio 2015 and ‘winmm.lib’ must be linked.

2 Main window

Fig. 1 shows the main window of ‘manifit.exe.’ Open a WAV file by the file menu (① in the figure). Select the value of ‘Number of FIR taps’ from the dropdown list (②) if necessary. Then press the ‘Get set button’ (③) and the ‘EXECUTE / STOP button’ (⑤) will be enabled. By pressing the ‘EXECUTE / STOP button,’ the WAV file can be reproduced and the pitch of the reproduced sound can be manipulated by changing the value in the

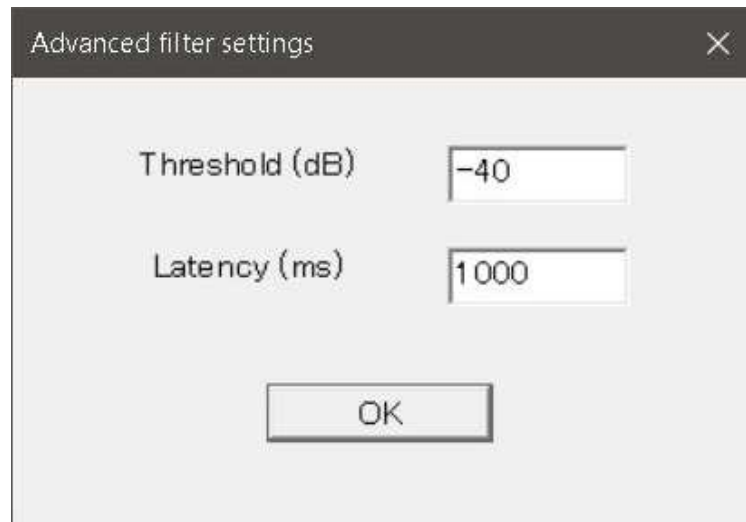


Fig. 2: Advanced filter settings window

In the Advanced filter settings window, the parameters ‘Threshold’ and ‘Latency’ can be set.

spin control (④). Reproduction can be stopped by pressing the ‘EXECUTE / STOP’ button again. To save the pitch-converted sound as a WAV file, choose ‘Save’ in the file menu.

3 Advanced filter settings

By ‘Advanced’ in the ‘Edit menu’ (⑥), the ‘Advanced filter settings’ window (Fig. 2) can be opened. In this window, the parameters ‘Threshold’ and ‘Latency’ can be set. When the level of the sound exceeds the level specified by ‘Threshold’ value for the first time after elapsing more than the interval specified by the ‘Latency’ value, the time-varying filter is forced to be re-wound. You can, therefore, control the timing to rewind the filter by setting these parameters.

4 License of ‘p_shifter.cpp’

MIT license

Copyright©2021, AIST

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.