MANIPIT 1.0.6 user guide
Sample application of the audio pitch converter module
⟨ p_shifter.cpp ⟩

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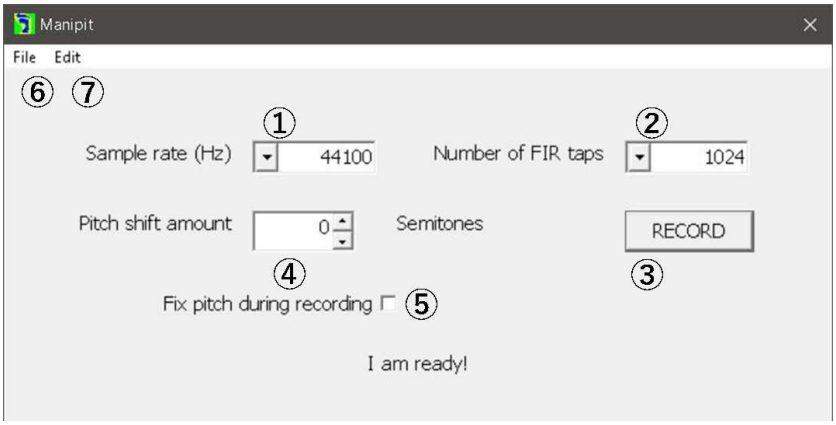

Fig. 1: Main window
The main window of 'manipit.exe' has 'RECORD / STOP button,' 2 dropdown lists, 1 spin control, 1 check box, 'File' menu, and 'Edit' menu.

1 Preface

'Manipit' is the realtime audio pitch converter. By using 'manipit.exe,' you can manipulate the pitch of the sound during the recording. 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. The duration of the recording can be as long as 30 minutes.

'Manipit' 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.

'Manipit' 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 'manipit.exe.' Select the values of 'Sample rate' and 'Number of FIR taps' from the dropdown lists (①, ② in the figure) and the 'RECORD / STOP button' (③) will be enabled. Recording of the sound is started by pressing the 'RECORD / STOP button,' The pitch of the sound can be manipulated by changing the value in the spin control (④). Recording can be stopped by pressing the 'RECORD / STOP button' again. During the recording, you can hear the pitch-conveted sound.

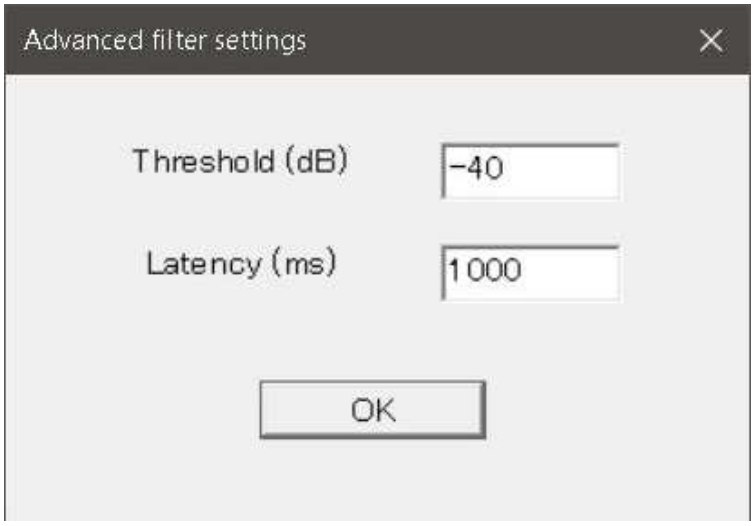

Fig. 2: Advanced filter settings window
In the Advanced filter settings window, the parameters 'Threshold' and 'Latency' can be set.

If the check box (⑤) is marked, the spin control will be disabled and the value of the pitch shift amount cannot be manipulated during the recording. In that case, less memory is consumed by the program.

To save the pitch-converted sound as a WAV file, choose 'Save processed sound' in the 'File' menu (⑥). You can also save the original sound (without the pitch conversion) by choosing 'Save original sound' in the 'File menu.'

3 Advanced filter settings

By choosing 'Advanced' in the 'Edit' menu (⑦), 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 rewound. You can, therefore, control the timing to rewind the filter by setting these parameters.

4 License of 'p_shifter.cpp'

MIT license