

Introduction

AmazingMIDI transcribes music automatically by converting WAV files into MIDI files. It can handle not only monophonic music but also polyphonic one. It's a powerful tool helps you to transcribe music, practice musical instruments, make MIDI files, and so on.

AmazingMIDI creates an Output File (.MID) from an Input File (.WAV) and a Tone File (.WAV). An Input File is to be transcribed and should contain musical data. A Tone File is used as a reference and should consist only of monotone data. AmazingMIDI analyzes an Input File assuming every sound in the file is played with the same tone color as the one in the Tone File. AmazingMIDI can not pick up one specific musical instrument from the several ones currently. However, again, it's a powerful code analyzer.

The Output File is a Standard MIDI File. Therefore, you can edit it with MIDI sequence software. The tone, or the Program Number, of the Output File may be chosen arbitrarily.

Now, let's try AmazingMIDI with the sample files attached and see how it works. (See [Let's try!](#))

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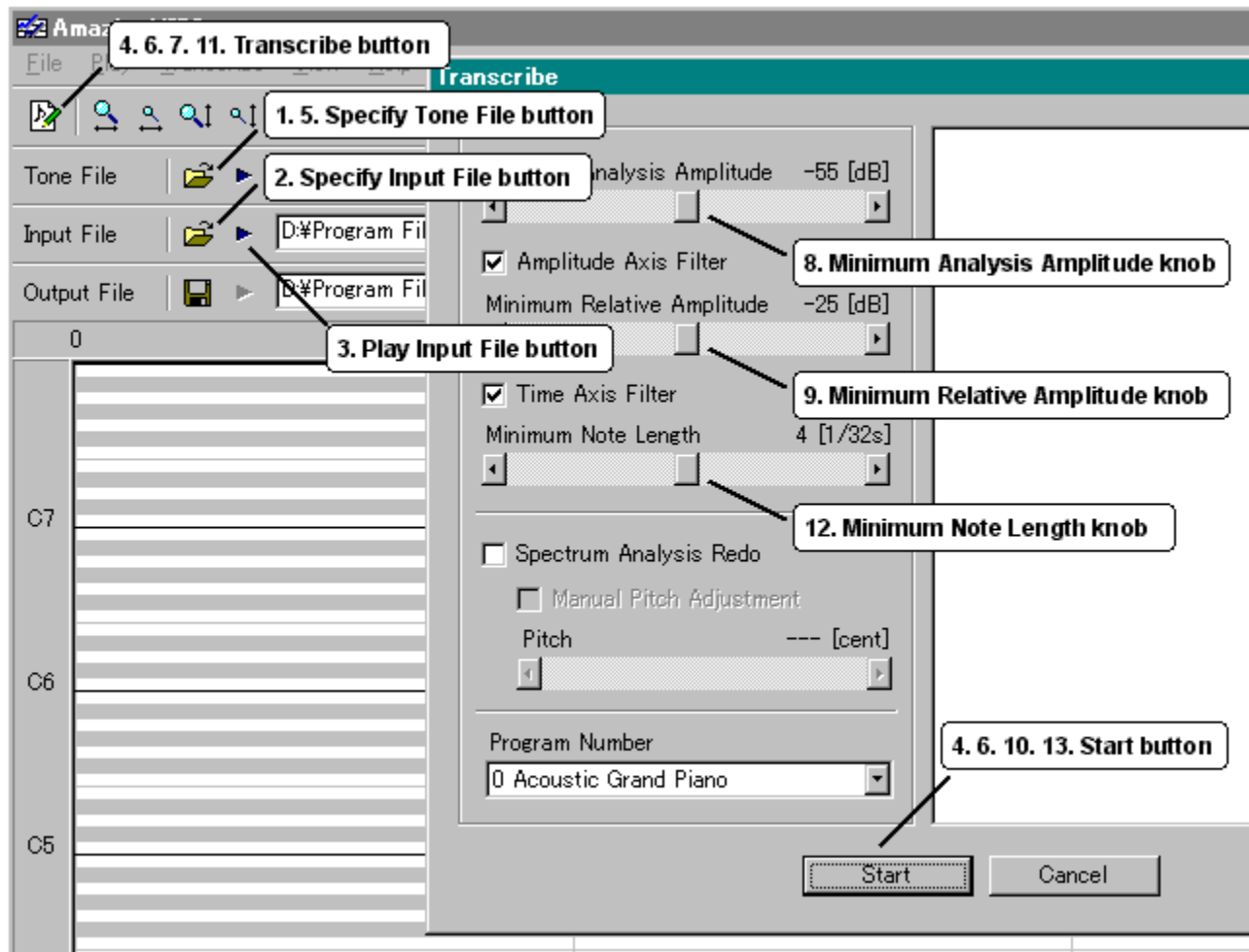
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Let's try!

Let's try AmazingMIDI with the sample files attached. See the picture below.



First of all, select the files.

1. Open the file dialog box by clicking "Specify Tone File" button and choose "piano0.wav".

2. Open the file dialog box by clicking "Specify Input File" button and choose "sample.wav".

When you select the Input File, the default name of the Output File is set to "sample.mid". Now, how about listening to the music recorded in the file?

3. Click "Play Input File" button.

You can hear the piano sound, right? Now, close Play window and let's transcribe the music.

4. Open "Transcribe" dialog box by clicking "Transcribe" button and click "Start".

It might take a while to analyze the WAV file for the first time. When the analysis is finished, "sample.mid" is played back automatically. Well, you see it worked almost correctly. However, you'll notice strange noise at this point. This is the harmonic overtone. Then, let's try the other Tone File.

5. Open the file dialog box by clicking "Specify Tone File" button and choose "piano1.wav".

6. Open "Transcribe" dialog box by clicking "Transcribe" button and click "Start".

This time, the analysis should be completed very quickly. This is because AmazingMIDI creates a Spectrum File after the first analysis and uses this file from the second time. You may notice less harmonic overtone now since "piano1.wav" contains a lot of harmonic overtone components. All right, let's adjust the amplitude-filtering parameter.

7. Open "Transcribe" dialog box by clicking "Transcribe" button.

8. Adjust "Minimum Analysis Amplitude" knob to -50 dB.

9. Adjust "Minimum Relative Amplitude" knob to -20 dB.

10. Click "Start" button.

The sound is clearer now since the noise is attenuated. However, the beginning part of the piece is lost, isn't it? No problem. Let's adjust the time domain filtering parameter.

11. Open "Transcribe" dialog box by clicking "Transcribe" button.

12. Adjust "Minimum Note Length" knob to 2 (1/32 sec.).

13. Click "Start" button.

The sound quality is enough for transcribing the music this time, right? You may consider this is the typical final quality.

Other sample files such as "sine.wav" or "pulse.wav" are the specially made Tone Files. "Sine.wav" contains only sinusoidal wave data. Therefore, you can extract most of the chord notes from the Input File by using this file. On the other hand, "pulse.wav" contains rich harmonic overtones. Therefore, it's suitable for the analysis of the monophonic music.

For details, see [How to Use](#), [Specifications](#), [How to Transcribe Music](#), and [Some Tips](#).

How to Use

You need two WAV files to transcribe music. One is an Input File that contains musical data, and the other is a Tone File that consists of monotone of any musical instrument. For WAV files, see [Specifications](#). To start transcribing music, you have to select each file, open Transcribe dialog box, and click Start button.

The spectrum analysis of a WAV file is pursued to obtain spectrum data. This analysis may take a while for the first time. However, since the obtained data is saved as a Spectrum File, the analysis speed should be much faster from the second time. For Spectrum Files, see [Spectrum Files](#).

When there is a problem during the analysis, the error or warning message will show up. For details, see [Error and Warning Messages](#).

The result of the analysis is indicated as the "piano roll" familiar in MIDI sequence software. Color shadings on the score express the "Velocity" levels of the notes. You can magnify or contract the time and the note axes. The screen-synchronized play back is possible and the music is played back from the left hand of the screen. Unfortunately, the edit function for Output Files is not available.

The tool buttons are prepared for the main commands. The explanations of the functions are shown on the button and at the bottom of the window by moving the cursor onto the button. See [Parameters](#) to change the parameters.

The histories of the successfully analyzed files are recorded. Only for the Tone Files, the latest used file is selected automatically as a default file when AmazingMIDI starts up. The default name of the Output File is made just replacing the Input File extension "wav" to "mid".

Parameters

An analysis is divided into two processes. One is the spectrum analysis that converts the time domain data to the frequency domain ones, and the other is the note analysis that extracts the notes from the piece. The only parameter referred to during the spectrum analysis is "Pitch". However, you don't have to worry about this parameter without any instructions since it's usually adjusted automatically. On the other hand, the parameters used during the note analysis should be adjusted depending on the condition of the piece. It is recommended to analyze the piece with the default parameters at first. If you need some fine adjustment, then do it. Tone Files also affect the analysis result considerably. For details, see [Tone Files](#).

Parameters for Note Analysis

Minimum Analysis Amplitude [dB]

This parameter denotes the smallest amplitude of the spectrum recognized during the analysis. The smaller value means the better recognition of dim sounds. However, too small value picks up much noise. You must take the noise level into consideration when setting up this parameter. 0 dB corresponds to the amplitude of 65,536 peak-to-peak, or the maximum value of 16-bit resolution.

Amplitude Axis Filter check box

You can filter out the remaining harmonic overtone and the amplitude fluctuation noise from the extracted sound by checking this box. If not checked, the filter is disabled.

Minimum Relative Amplitude [dB]

This parameter is for the amplitude axis filter. The filter treats the notes played at the same time (within about 0.2 sec.) as a code and deletes the noise within the code. This parameter indicates the smallest amplitude of the note within the code that isn't filtered out. The parameter shows the relative value of the minimum amplitude with respect to 0 dB, the maximum one in the code. The larger value means the more effective filter. However, too large value could delete the necessary notes.

Time Axis Filter check box

By checking this box, you can activate the time axis filter. If not checked, the filter is disabled.

Minimum Note Length [1/32 sec.]

This parameter is for the time axis filter and represents the shortest note length. The larger value means the more effective filter. However, again, too large value could delete the necessary notes. The unit step is 1/32 seconds.

Parameters for Spectrum Analysis

Spectrum Analysis Redo check box

When this box is checked, the spectrum analysis of the Input File is redone and the Spectrum File is renewed. (See [Spectrum Files](#).) You don't have to check this box normally since the new or

renewed Input File is analyzed automatically. However, if you need to control the pitch manually, you should check the box. "Spectrum Analysis Redo" is effective only on the Input Files (not on the Tone Files).

Manual Pitch Adjustment check box

Check this box when you need to control the pitch manually. When the box is not checked, the pitch is adjusted automatically. Confirm the box is not checked when you reanalyze the data with automatic pitch adjustment after the analysis with manual pitch adjustment.

Pitch [cent]

You can adjust the pitch with this function. A half tone corresponds to 100 [cent].

Parameters for Output File Format

Program Number

This parameter sets up the Program Number of the output MIDI file. The default value is No. 0, Acoustic Grand Piano.

Spectrum Files

The spectrum data obtained by the analysis depend only on the waveform data of the WAV files. Therefore, it's a waste of time to redo the spectrum analysis when only the note analysis parameter or the Tone File (or both of them) is changed. Therefore, the obtained spectrum data is saved as a Spectrum File (.SPC). From the second time, the spectrum data is got form this file to avoid the time consuming analysis.

The last WAV file renewal time, the data size, and the pitch data are also recorded in a Spectrum File. When the WAV file is renewed or the analysis data length is changed due to user registration, the spectrum analysis is redone automatically. Thus, you don't have to check the Spectrum Analysis Redo check box unless you need to control the pitch adjustment manually. (See [Parameters](#).)

A Spectrum File is a binary file and created under the same folder as the corresponding WAV file is. The filename is made just changing the extension of the WAV file to "spc". Do not edit the files by the other applications since unexpected error could occur during the analysis. If you find some error when a Spectrum File is read, delete the file.

Error and Warning Messages

The error or warning messages show up when something is wrong with the analysis. The error messages are indicated when the analysis can not be pursued anymore due to some reason. The warning messages are shown when something not fatal but unsuitable happens. The analysis is continued in warning case. The following are details.

Error Messages

"Not enough memory."

There is not enough memory for the analysis. It could happen when you use several applications at the same time or the disk space is not enough. AmazingMIDI needs about 16MB minimum memory.

"Cannot create the Output File. The specified folder may not exist, or the specified file may be already in use by the other application."

The specified file can not be accessed in write-mode. It could happen when the specified folder doesn't exist, the specified file is opened by the other application, it is prohibited to overwrite the specified file, or the disk space is not enough.

"The file access failed. The specified file may not exist, or the file may be already in use by the other application."

The specified Input or Tone File can not be accessed. It could happen when the specified file doesn't exist, or the file is opened by the other application.

"The file may be destroyed."

The specified Input or Tone File may be destroyed.

"Unsupported format. The specified file format is not {PCM, 16-bit, 22.050kHz} or {PCM, 16-bit, 44.100kHz}."

The specified Input or Tone File format is not {PCM, 16-bit, 22.050kHz} or {PCM, 16-bit, 44.100kHz}.

"Cannot find the sound attack point."

The sound attack point can not be found from the specified Input or Tone File data. The automatic pitch adjustment can not work correctly when the sound attack point does not exist within 10 second from the data starting point.

"Data too short. 0.25 sec or longer is required."

The specified Input or Tone File data is too short. 0.25 second or longer data is necessary.

Warning Messages

"Data beyond 512 sec. The analysis is terminated at 512 sec."

The specified Input File data is too long. The analysis is terminated at 512 second.

"Tone File data beyond 1 sec."

The specified Tone File data is too long. You might have selected the file for Input File as the Tone File.

"Cannot create Spectrum File."

The Spectrum File can not be accessed in write-mode. It could happen when the Spectrum File is opened by the other application, the overwriting is prohibited for the Spectrum File, or there isn't enough disk space.

"Data beyond 30 sec. The data size is limited up to 30 seconds for unregistered version."

This warning is indicated when you try to analyze a WAV file longer than 30 seconds with the unregistered version.

Specifications

File Formats

Input File and Tone File (WAV file)

File form:	Windows PCM waveform
Resolution:	16-bit
Sample rate:	22.050 kHz, 44.100 kHz
Channels:	mono, stereo
Length:	0.25 sec to 512.0 sec

Output File (MIDI file)

File form:	Standard MIDI File
Format:	Format 0
Tempo:	240 BPM
TPQN:	96
The shortest note:	32nd note

Other Specifications

- AmazingMIDI can analyze the sound from C2 to B7 (72 stages).
- The stress is expressed with the velocity.
- The analysis may take a while. For example, you'll need one minute to analyze a one minute long piece (22.050 kHz sample rate) with Pentium II 266MHz.

System Requirements

AmazingMIDI requires at least 16MB RAM and considerable CPU power for the analysis. It is recommended to use as fast computer as possible.

AmazingMIDI was checked with the following system.

OS: Windows 95 / 98 / NT4.0
CPU: Pentium II 266MHz
Memory: 64MB

How to Transcribe Music

The following is the step by step explanation of how to transcribe tunes. See [Tone Files](#) and [Some Tips](#) for more effective ways.

1. Make a WAV file from the Compact Disc.

You can find a bunch of on-line software which make a WAV file directly from a CD. (Generally, They are called "CD Ripper".) A high quality WAV data is available by using those software.

2. Edit the WAV file and change the format.

Edit the WAV file and get the necessary file length or file format by using WAV edit software.

3. Convert the WAV file into the MIDI file by using AmazingMIDI.

Choose proper Tone File, adjust the parameters, and then, analyze the piece.

4. Transcribe the music by correcting the output MIDI file.

The created MIDI file can't be directly used as a musical score. Use MIDI sequence software and correct the file to complete the transcription.

Tone Files

A Tone File has a considerable effect on analysis results. Therefore, it is recommended to prepare several Tone Files for a musical instrument. The Tone File should satisfy the following requirement.

- Should include at least one sound attack point.
- The data should be monotone.
- The pitch should be around C3 to C5.

If the monotone data is rich of harmonic overtone, the high tone noise of the Output File can be suppressed. However, it becomes hard to recognize the high tone part of a code. On the other hand, if the monotone data has little harmonic overtone, all the code components can be recognized. However, the overtone noise can not be suppressed effectively.

Only the peak amplitude spectrum is used as the monotone data. Therefore, unnecessarily long file would be a waste of time. If the monotone data contains some noise such as hum, the pitch might be incorrectly recognized.

Some Tips

The following are some tips to use AmazingMIDI effectively.

A Tone File affects on analysis results considerably. And, the characteristics of an instrument depend on the manufacturer, the environment of the stage, the sound range, and so on. Therefore, it is recommended to prepare the Tone File that has the similar sound characteristics to the one of the Input File. The Tone file, whose sound range is close to that of the Input File, is also effective. For more information, see [Tone Files](#).

You have to adjust the parameters depending on the recording level. For details, see [Parameters](#). A very effective filter is available. However, it is recommended to use the less effective filter if your goal is to transcribe the music.

The shading of the indicated note shows the stress, or velocity, of the note. This is also a useful tool for transcribing the music.

AmazingMIDI adjusts the sound pitch automatically to improve the analysis quality. The beginning part of the WAV data is used for this purpose. Since AmazingMIDI can recognize the very weak sound, delete the soundless beginning part as much as you can (at least 1 sec.) to avoid any mistake. If you get the analysis result that has a lot of neighboring half tones, the beginning part of the piece might have something wrong. In this case, try it again after changing the beginning position by editing the WAV file, or adjusting the pitch manually.

You can not adjust the pitch manually for Tone Files. If you do want to adjust it by yourself, select the WAV file as an Input File instead as a Tone File. Then you can do it. However, you'd better avoid using the WAV file whose pitch can not be adjusted automatically as a Tone File.

AmazingMIDI can treat stereo WAV files. However, the algorithm is not very suitable for this work. And, since the 22.050kHz sampling rate is enough, the result can not be improved any more even if you analyze a piece with 44.100kHz. The most efficient WAV file format is 22.050kHz, mono.

Unfortunately, AmazingMIDI is not so good at treating bass sound. The analysis result tends to have more harmonic overtones when the pitch becomes lower. Especially, when the lowest pitch sound is out of analysis range, AmazingMIDI tries to make the spectrum forcibly by using its harmonic overtones.

AmazingMIDI is suitable for analyzing the precise frequency, attenuating sounds like piano or guitar. It can handle pieces played by several instruments to some extent. However, the drum sound becomes only noise.

Installation and Uninstallation

Installation

Simply create a new folder (e.g. C:\Program Files\AmazingMIDI) and unzip all files into that folder.

AmazingMIDI package includes the following files:

azmid.exe	(AmazingMIDI executable file)
azmid.hlp	(AmazingMIDI help file)
azmid.cnt	(AmazingMIDI help contents file)
sample.wav	(Sample Input File)
piano0.wav	(Sample Tone File)
piano1.wav	(Sample Tone File)
sine.wav	(Sample Tone File)
pulse.wav	(Sample Tone File)
readme.txt	(Readme file)
register.exe	(REGISTER program)
register.hlp	(REGISTER help file)

The executable file is "azmid.exe". Please create a shortcut to "azmid.exe", if necessary. (Use the left mouse button to drag "azmid.exe" to your desktop.)

If you are updating AmazingMIDI from the older version, delete all the old files at first before the installation of the new version. But, you don't have to delete "azmid.ini" under Windows folder.

Uninstallation

Please delete all the files shipped and "azmid.ini" under the Windows folder. The Registry is not used.

Frequently Asked Questions

Q: When I try to analyze some WAV files, I get "Unsupported format", even though I can play the same file by Play command. Why?

A: AmazingMIDI supports the following format only:

Format:	Windows PCM (.WAV)
Resolution:	16-bit
Sample Rate:	22.050 kHz or 44.100kHz
Channels:	stereo or mono

However, AmazingMIDI leaves the play function to Windows. Therefore, you can play all WAV files by Play command.

Q: I can't transcribe vocals well. Is it possible to improve the transcription ability on vocals by adjusting the parameters?

A: Unfortunately, AmazingMIDI provides poor results on unstable pitch sounds like vocals. It isn't so effective to adjust the parameters for vocal transcription. The automatic pitch adjustment sometimes fails with such unstable sounds. So, try to adjust the pitch manually.

Q: The indication of the playing position doesn't correspond to the actual sound.

A: If you use MIDI emulation software, sometimes each position doesn't fit. And, with Windows NT4.0, the indication doesn't move smoothly.

How to Register

AmazingMIDI is shareware. If you decide to continue using it after the 30-day evaluation period, please register it with **US\$ 35**.

The unregistered version is fully functional with the following only one exception:

- The maximum data size is limited up to **30 seconds**.

Once registered, this limitation is removed, and the maximum data size will be extended up to **512 seconds**.

For the highest quality of service and security, all orders are handled by the Kagi payment processing service. For more information about Kagi, visit their FAQ page. Once your payment has been processed, you will receive a Registration Code to enter in the Registration dialog box. Your Registration Code will be sent to you via e-mail. So, please be sure to include your correct e-mail address.

Order Online (fastest)

If you have a credit card, you can register AmazingMIDI on the web. This is the fastest and simplest way. If your browser supports "secure sockets", use the secure SSL version, otherwise, use the regular versions.

[Kagi Online Order Processing \(secure SSL\)](#)

[Kagi Online Order Processing](#)

Order by e-mail / FAX / mail

If you don't want to use a credit card on the web, or if you are not paying by a credit card, you can use the REGISTER program. The REGISTER program encodes the information so that it travels more safely. The REGISTER program is included AmazingMIDI package.

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Unregistered Evaluation Version

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Support

Please check this help file or AmazingMIDI homepage before sending e-mail. Most of the common questions are already answered. If you can not find an answer in those places, please send e-mail.

Homepage: <http://www.pluto.dti.ne.jp/~araki/amazingmidi/>
E-mail: araki@pluto.dti.ne.jp

If you have a question about how to order, send e-mail to admin@kagi.com.

