

# Tapper User Guide

## Introduction

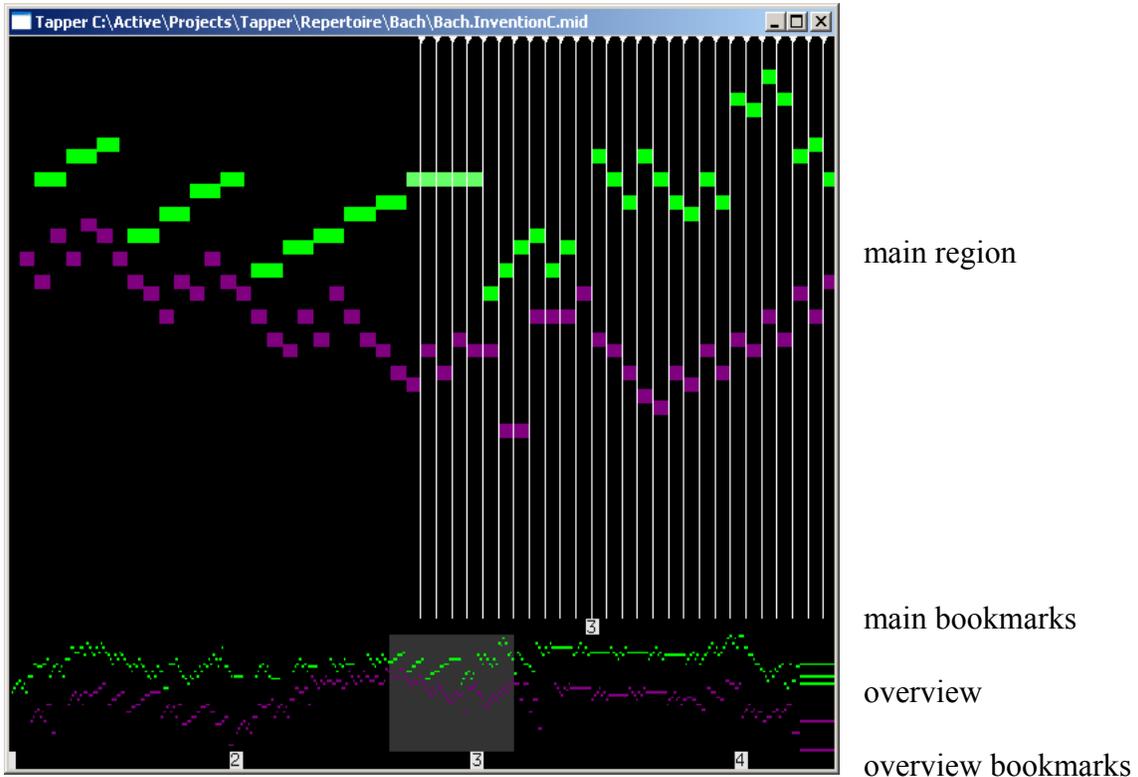
The conductor program is a form of computer-mediated musical performance in which the score of a musical composition is stored in the computer and the performer controls its playback with some sort of expressive gesture. In Stephen Malinowski's implementation of the conductor program called Tapper, these gestures are single keystrokes on either a MIDI keyboard or the ASCII (typewriter) keyboard on the computer.

## Operation

Notes are grouped into alternating sets of *play groups* (which are explicit and indicated in the display) and *release groups* (which are implicit and not shown). Play groups are groups of note *starts* (MIDI NOTE ON events) that happen at the roughly same time — for example, notes in a chord that is played on a certain beat. Release groups are all the notes *ends* (MIDI NOTE OFF events) that happen between one play group and the following play group. When you press a key, Tapper plays any note ends in the upcoming release group (there may be none) and all the note starts in the next play group. When you release a key and there are no more keys pressed, Tapper ends all the notes in the next release group.

## Display

The display is divided into these regions:



**main region** (top) shows the local span of notes; left mouse click changes position; vertical lines show timings of unplayed note groups; triangle markers (and their "scope whiskers") show play groups; left mouse click changes position

**bookmarks** with respect to main view; left-click in this region goes to the bookmark nearest the clicked point; "m" key turns bookmarks on and off

**overview** region shows the entire piece; left mouse click changes position; gray highlight shows scope of main window; this window can be turned off to make the program run faster (useful on slower machines) with "v"

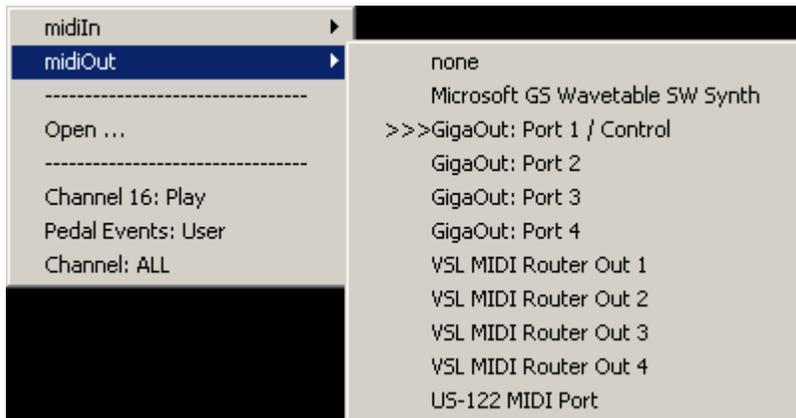
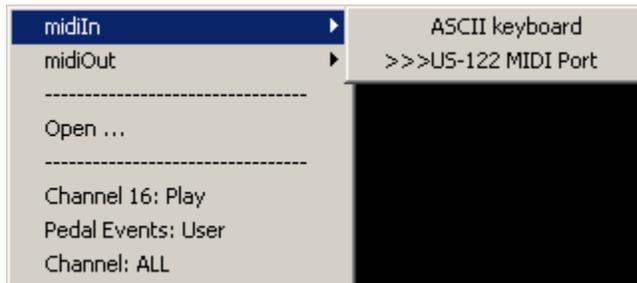
**bookmarks** with respect to overview; left-click goes to the nearest bookmark

## Menu

Clicking the right mouse button (or, if you're using a one-button mouse, clicking the button while holding down the control/ctrl key) anywhere in the Tapper window brings up this menu:

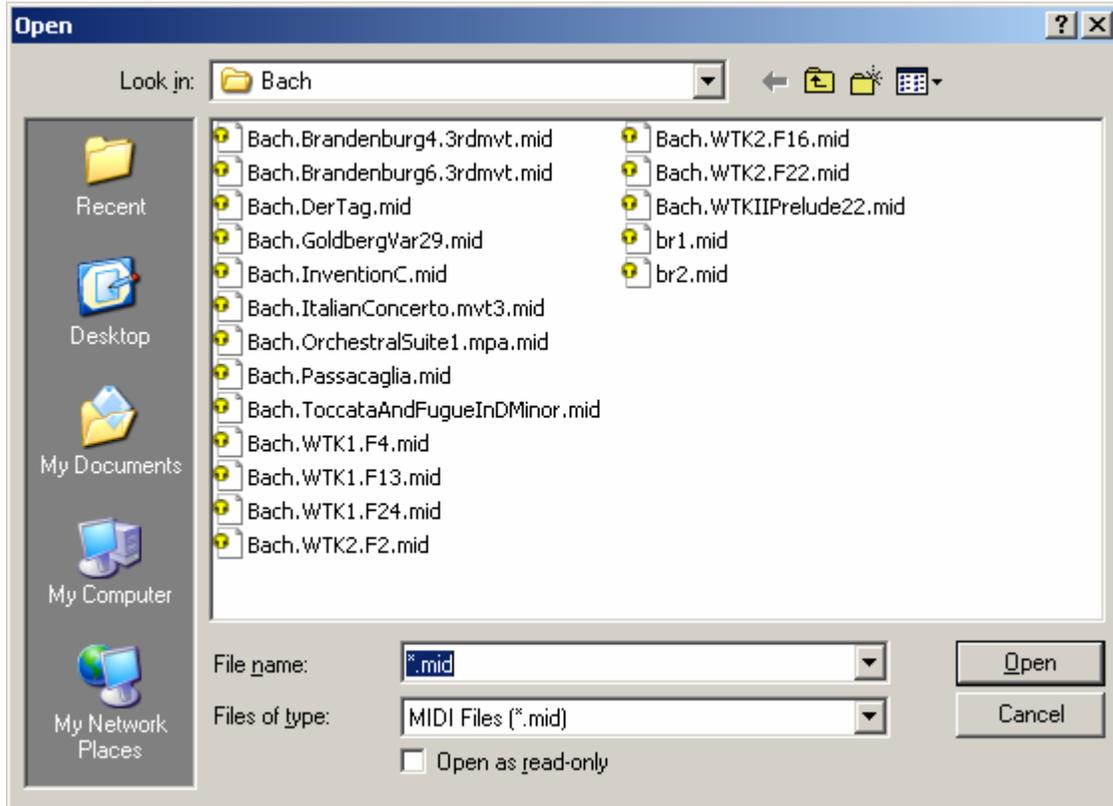


The first two items let you select your preferred MIDI In and MIDI Out devices:

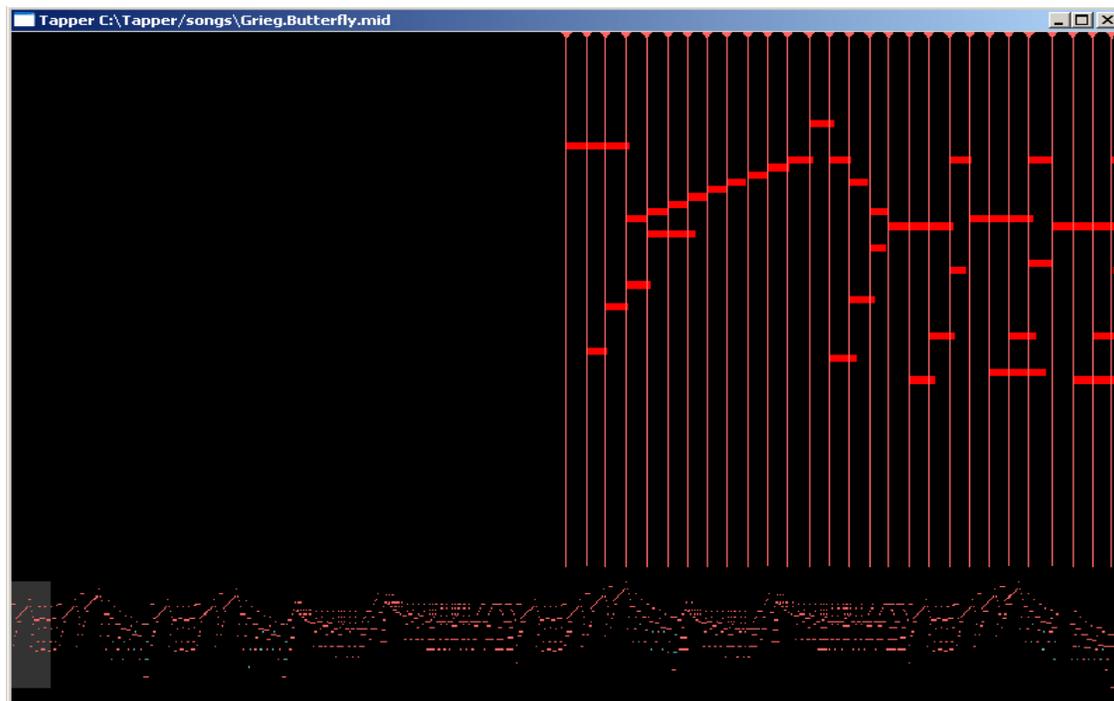


The “>>>” indicates which item is selected.

The “Open ... “ item lets you select a MIDI file to play.

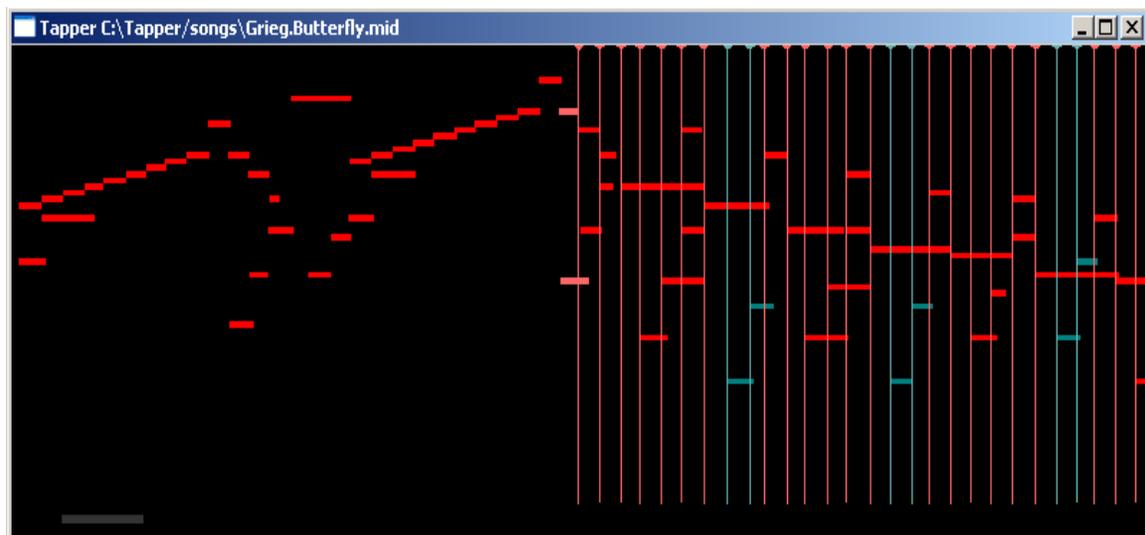


When you select a song, it is immediately loaded and ready to play:





The “Channel 16” item lets you control whether Channel 16 events are played back. Muting Channel 16 events is required for some pieces where the rhythm is unexpectedly irregular; in these pieces, notes on MIDI Channel 16 are used as “fillers” to make the rhythm more regular and easy to perform, for example, in Grieg’s *Butterfly*, the Channel 16 notes are seen in blue:





The “Pedal Events” item is necessary to prevent conflict between pedaling that is in the MIDI file and pedaling which you might do as a performer. If you are using an external damper pedal, you want to control the pedaling yourself (and not have pedaling from the MIDI file interfere with your playing), and you’ll set this item to “User.” If you have no pedal, you’ll probably want the pedaling from the MIDI file to work, in which case you’ll select “Auto.”



The “Channel” item lets you choose whether Tapper uses the MIDI channel information from the file (“ALL”) or interprets the MIDI file as being all in Channel One (“Force Channel One”). The latter is useful if you have a synthesizer that only receives on Channel One.

## Function keys

The following keys on the computer keyboard control various Tapper features:

key(s)	command	move	saved in
esc alt-F4 alt-Q	exit program	—	—
F	load MIDI File (same as “Open...”)	—	—
return enter	toggle full-screen display	—	CFG
page-down	group notes	—	MTA
end page-up	ungroup notes	—	—
right-arrow	move to next note group	Y	MTA
left-arrow	move to previous note group	Y	MTA
shift-right-arrow	move forward one screen	Y	MTA
shift-left-arrow	move back one screen	Y	MTA
shift-L l	make lines bigger / smaller	—	CFG
shift-N n	make notes bigger / smaller	—	CFG
C	cycle through Color options	—	CFG
M	set/unset Marker	—	MTA
tab	move to next marker	Y	MTA
backspace delete shift-tab	move to previous marker	Y	MTA
up-arrow	zoom in (notes get bigger)	—	MTA
down-arrow	zoom out (notes get smaller)	—	MTA
V	cycle through available View styles	—	CFG
H, home	move to Home (da capo, to first note)	Y	MTA
Q W E R T Y U I O P	play next group of notes (Tapper NOTE ON)	Y	MTA
. space	release all notes (if performing)	—	—
space	play original (from ‘now’ point to right edge)	—	—
1 2 3 4 5 6 7 8 9	move to bookmark #	Y	MTA
function keys	move to bookmark #	Y	MTA

Y in the **move** column means that the key command moves the “now” point.

Features **saved in** CFG apply to all pieces; features saved in MTA apply to one piece.

The following functions are not yet implemented

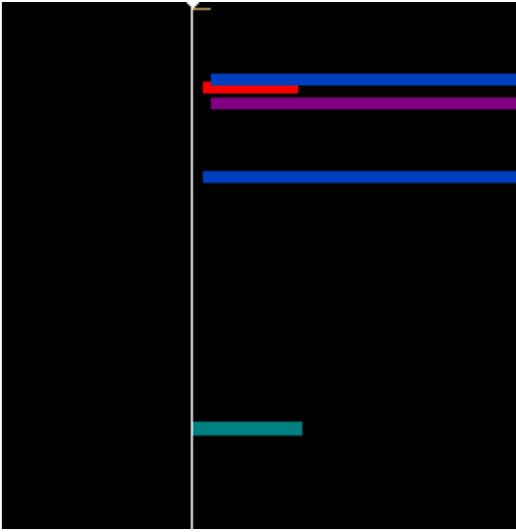
key(s)	command	move	saved in
shift-space	play last user performance (where available)	—	—
S	Save last user performance (not implemented)	—	—

Unused letters: a, b, d, g, h, j, k, p, x, z

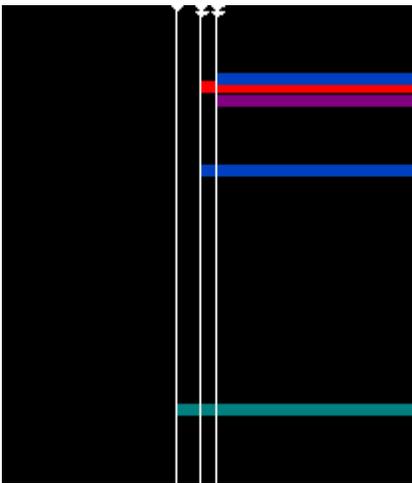
Unused symbols: ` ~ ! @ # \$ % ^ & \* ( ) - \_ = + [ { ] } \ | ; : ‘ “ < > / ?

## Note Group/Ungroup

Sometimes, you'll find place in a piece where Tapper plays either more or fewer notes than you'd like (in response to a single keypress). This is something you can change, using the Group/Ungroup command. For example, at this point in Brahms opus 72, #2, all the notes are grouped to be played by a single tap (as shown by the single line, the single tiny triangle at the top of the line, and the extent indicator sticking out from the right of the triangle):



If you press the Ungroup key (PageUp or End), the notes will be ungrouped, allowing each to be played by a separate keystroke:



What you *can't* do with this control is change the order of notes; for that, you need sequencer software or some other tool for change the order of notes in the MIDI file.

## **MIDI Input device**

For the most expressive control of Tapper, it is best to use a piano-style keyboard with weighted keys and a damper pedal. The limitations of the ASCII keyboard input are:

- it can have a higher latency (delay) than a MIDI keyboard
- it does not have velocity sensing (so dynamics are controlled from the original MIDI file instead of by the performer)
- note releases are not controlled, so everything comes out legato

## **Platform-specific notes: Windows**

The time it takes from when you press a key in Tapper and when the sound comes out of the loudspeaker is called *latency*. Ideally, latency is very short — short enough not to notice — but some software synthesizers can have latency that is long enough to notice, which makes it hard to use Tapper in faster passages, because the tap for one note starts getting close enough to the playback of the previous note, which causes confusion. The Microsoft GS Wavetable SW Synth can have very long latency on some computers. If it is a problem for you, there are several possible alternatives:

- use a third-party software synthesizer with lower latency (such as GigaStudio)
- use an external hardware synthesizer (MIDI module)
- if available on your machine, use the Microsoft Synthesizer

This last option, the Microsoft Synthesizer, uses a software synthesizer that is similar to the Microsoft GS Wavetable SW Synth, but with two differences: it has reverb, and the latency is adjustable. If this option is available on your machine, Tapper will create a second configuration file, `WindowsSynthGeneralMIDI.cfg`. When you first run Tapper, this file will be created with the default latency value (measured in milliseconds). To reduce the latency, edit this file (e.g. with Notepad) and replace it with a smaller number. If the number is too small, the audio will be distorted, so you may want to experiment to find the smallest number that works.

## Platform-specific notes: MacOSX

If you're using a one-button mouse on the Mac, there is no "right-click" available, but the same effect can be achieved by pressing the mouse button while holding down the Control key on the typewriter keyboard. To enable this, select Tapper Preferences from the Tapper menu



and then **Enable Button Emulation**, and set the **Right Button Modifier** to **Control**:

