This tutorial describes using Anvil Studio with a VST-Instrument to record a MIDI track from an external keyboard, and quantize the track to correct timing errors.

Equipment used in this tutorial:

- Kurzweil PC88 MIDI keyboard
- Lexicon Omega audio interface
- Sony MDR-7506 Headphones
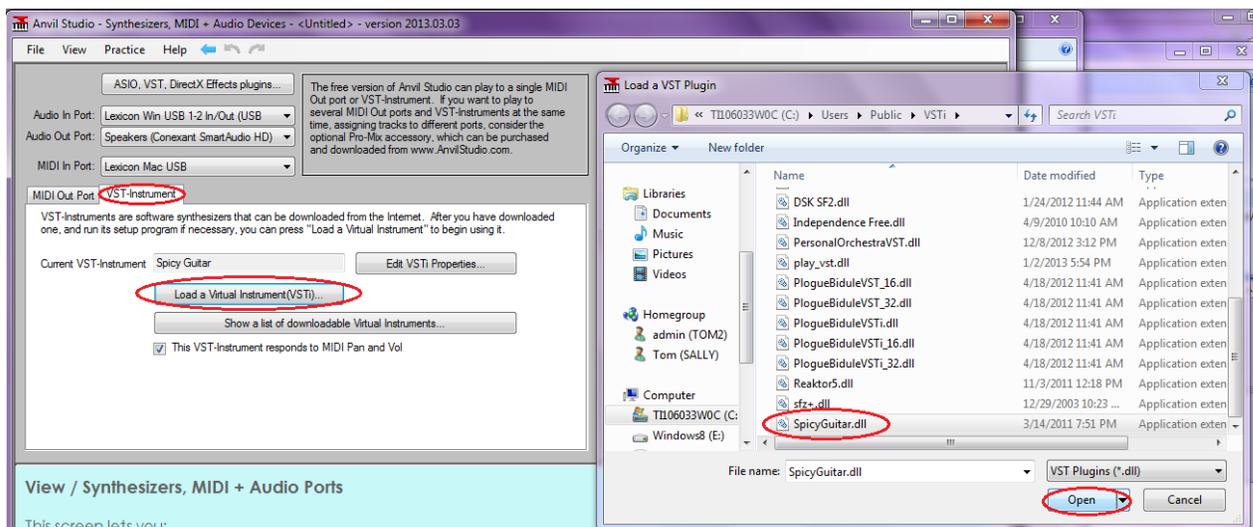- Toshiba Satellite L640 laptop with an Intel Core i3 processor running Windows 7 and Anvil Studio.
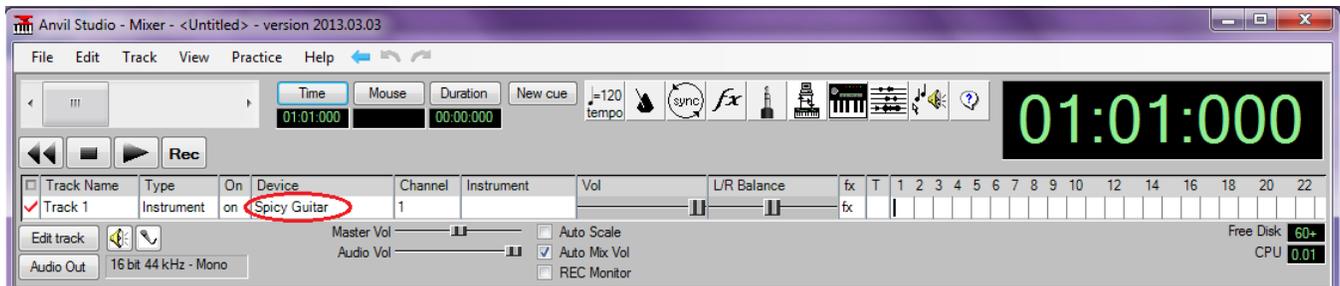
(MIDI cable)

Loading the VST-Instrument and using it to play the MIDI track(s)

When we assign a MIDI track to be played by a VST-Instrument, the notes on that track are converted to a stream of audio samples by the VST-Instrument, and then mixed with the other audio tracks. Each VST-Instrument does this in a unique way that results in a nearly infinite number of timbres, or instrument sounds, we can use. There are thousands of great sounding VST-Instruments available on the web, and many of them are free.

1. Download the VST of your choice, e.g. Spicy Guitar VST-Instrument from www.spicyguitar.com .
2. Start Anvil Studio.
3. Select the menu **View / Synthesizers**.
4. Select the **VST-Instrument** tab.
5. Press the button Load a Virtual Instrument (VSTi).
6. Select SpicyGuitar.dll, or whatever VST-Instrument you want to load, and press Open.

7. A disadvantage of using a VST compared to a hardware MIDI synthesizer is that we have to monitor the computer's audio output rather than the device's or audio interface's output, which means there will be some latency, or delay. To reduce latency to an acceptable level:
   a. Select the menu **View / Options**.
   b. Select the **Audio** tab.
   c. Set the buffer size to 256 and the number of output buffers to 2.
      Two buffers of 256 samples each results in a total of 512 buffered samples, or 512/44100 or 0.0116 seconds of latency. Latency in this case measures the amount of time from when you press a MIDI key until its sound reaches the speakers. We should add the VST's own latency to calculate the total delay, but like many VST-Instruments, SpicyGuitar has very low latency.
8. Select the menu **View / Mixer**.
9. Ensure that track 1 is assigned to be played by SpicyGuitar.

Recording a MIDI track from an external keyboard

1. Connect external MIDI keyboard's MIDI Out ←MIDI cable → Audio Interface's (Lexicon's) MIDI In.
2. Power up the external MIDI keyboard.
3. Select the menu **View / Synthesizers**.
4. Ensure the MIDI In port is set to the one your external MIDI keyboard is connected to.
5. Select the menu **File / New**.
6. Right-click on Track 1 to give it a meaningful name, such as Piano.
7. Right-click the metronome button at the top of the screen.
8. Click the Advanced button.
9. Set the desired Tempo, number of lead-in beats.
10. Set the check boxes for **Metronome is on** and **Silent when not playing or recording**.
11. Press **REC**, and after the lead-in beats, begin playing the external MIDI keyboard.
12. When finished, press the stop button on Anvil Studio's transport panel, or press **REC** again.
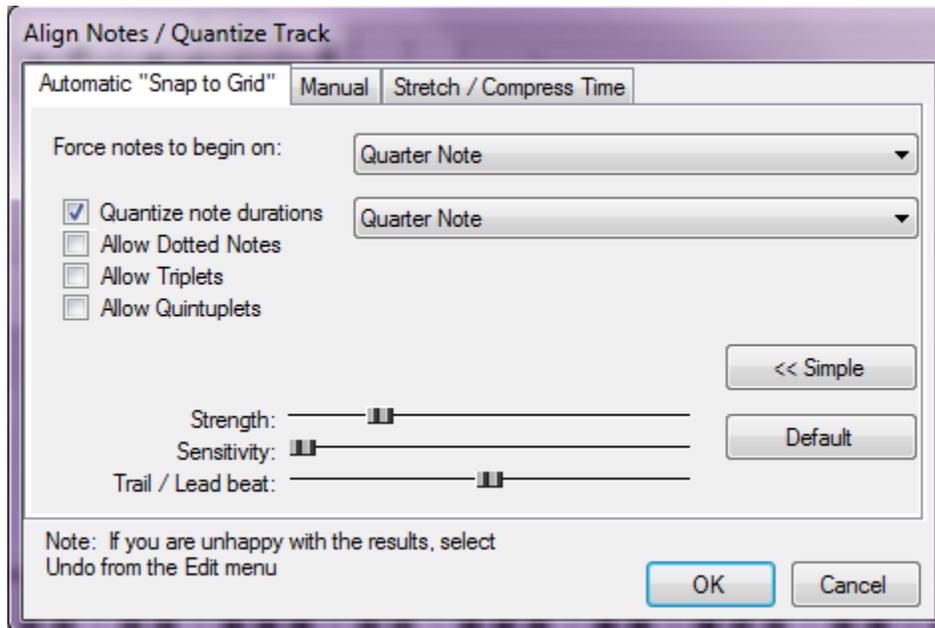
Quantizing the track so that notes "snap to a grid"

1. For this example, I recorded a simple scale of quarter notes in the key of C, and despite my best efforts, the notes appeared like this:

2. To make the note start times and durations come closer to quarter note boundaries, select the menu **Track / Align notes with measures (quantize) / Entire Track**.
3. In the resulting window, since all the recorded notes were supposed to fall on quarter-note boundaries, and have a duration of quarter note, set:
   a. **Force notes to begin on** to **Quarter Note**.
   b. Set the checkbox **Quantize note durations** and set the field to the right to **Quarter Note**.
   c. Set **Strength** to 20%. This causes it to shift the notes only 20% of the way toward their ideal, so that they get tightened up, but still retain a human-player quality rather than sounding

mechanical.

4. After repeating step 3 three times, the playback sounds more precise, yet still sounds like a human player, and the resulting score now looks like this: