A quick start guide to

INSTACOMPOSER

A MIDI generator plug-in

InstaComposer is a MIDI generator plugin designed to procedurally generate melodies, phrases, riffs, chord progressions and other musical elements.

- **Infinite number of ideas:** Never produces the same output twice.
- **Artificial intelligence:** Makes decisions that are not just random. The AI has its own preferences and tries to generate more pleasing rhythms and pick more suitable notes based on the scale, the chords and the note's position in the phrase.
  - **Structuring beats and bars:** Uses different shapes and formats to build interesting combinations of beats and bars. This will add the necessary rhythmic and melodic consistency and a structure we often find in music. A crucial reason why humans enjoy music and art in general is because the brain has evolved to be an advanced pattern recognition machine. When it successfully discovers interesting shapes, patterns and mathematical relationships in its sensory data, it rewards us with positive feelings. And when things seem just random and chaotic, we get bored with if not bothered by it.
  - **Generating patterns and motifs:** Uses small musical ideas that keep repeating or reoccurring throughout the melody.
  - **Adding harmony:** Sometimes adds harmony notes. Often a 3rd, 5th, or an octave above, sometimes other intervals and other times a combination of these.
  - **Following the chords:** Sometimes decides to pick notes only from the current chord. This should bring out the chords underneath and make the melody a bit more in line with the chord progression.
  - **Chord progression generator:** Generates desirable sequences of chords inspired by the most commonly used chord progressions.
  - **Chaos control:** Ensures everything is under control, preventing extreme situations like notes repeating too much, jumping up or down violently or climbing too far in one direction.
  - **User control of the algorithms and probabilities:** Using the available controls users can specify their preferences and get similar results every time. They can tweak anything from chord complexity, note population, structuring beats and bars to pattern generation, adding harmonies, velocity randomization, etc.
- **Time Signatures:** Supports the majority of time signatures using different combinations of number of beats per bar and number of notes per beat.
  - **Beats per bar:** Can be set to any number between 1 and 8.
  - **Notes per beat: C**an be set to any number between 2 and 8.
- **Multi-Mode:** Includes different algorithms for generating different types of elements such as melodies, bass lines, rhythmic patterns, pads and chords. More modes will be added in the future updates.
  - **Melody:** An all-purpose mode that generates a wide variety of melodies and phrases.
  - **Riff:** Similar to melody but with shorter phrases, more repeating patterns and more restrict structures.
  - **Ostinato:** Generates short melodic phrases that keep repeating, often ignoring the chord changes underneath.
  - **Rhythm:** Generates more harmonies, focuses on rhythmic patterns and often picks chord notes. In a way similar to a rhythm guitar part.
  - **Bass:** Generates bass lines that fit and sit under the chords and melodies nicely.
  - **Pad:** Generates longer notes often adding harmonies based on the chords, suited for strings and pads.
  - **Chord:** Generates only the chord notes with options to add a bass note and auto inverse when needed.
- **Multi-Track:** Using the 5 available tracks, each with their own sets of controls, users can generate multiple layers based on the same chord progression.
- **Multi-Channel:** Using separate MIDI channels, each track can be routed to a different instrument making it easier to form a whole song.
- **MIDI editor:** Enables users to edit and make changes to the MIDI files within the plugin.
- **Save as MIDI:** Saves the output as a MIDI file on the drive. Each track can be saved separately.
- **Drag and drop:** Drag and drop the MIDI files directly to your host or file browser.

To infinity and beyond!

No premade MIDI, chord progression or rhythmic pattern is stored in the plugin. Everything is generated procedurally on the fly by the AI and the chances of generating the same output twice is near impossible. You have access to an infinite number of melodies and musical ideas. Every time you push the GO button you will get a fresh output that is only yours.

Keep reading to see how it is done. To make things easier, we are going to refer to the generated output as melody and ignore the specific generation types (riff, bass, pad, etc.).

The process of generating melodies is divided into 3 steps:

A.Generating chord progression
B.Generating rhythm
C.Generating pitch

A. Generating chord progressions

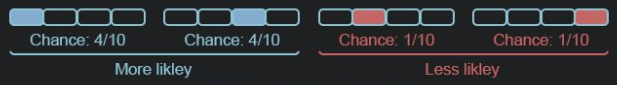
Chords are the foundation that the rest of the music is going to be built on top of. Using a set of rules and the data gathered from training the AI, the algorithm generates chord progressions with chords that are most likely to go well together. Users can also load or make their own chord progressions and the plugin will use those instead.

B. Generating rhythm

The goal is to generate a solid rhythm for the entire loop without worrying about the pitch just yet. This process is divided into 3 steps; building beats, building bars and building a combination of bars

B.1. Building beats

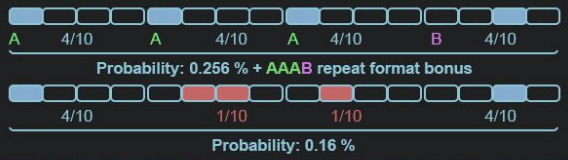
Database #1: A massive bank of possibilities and probabilities. Providing the smaller building blocks, a set of rules and valuable data gathered from training the AI that are going to be used to build longer patterns. This includes every combination of notes that can form a beat or a number of beats, accounting for various note lengths and different time signatures. Each possibility has been assigned a probability value based on what the AI has learned. These values are customized for each generation mode (melody, riff, etc.) and also factor in the settings available to the user. The algorithm uses this database to pick favorable blocks more often and build better rhythmic patterns.



Example: Smaller building blocks

B.2. Building bars

Database #2: When combining smaller blocks the data here helps the algorithm to structure better bar sized rhythmic patterns. Depending on the type of music we humans tend to repeat the same patterns often, use symmetrical shapes, downbeats or upbeats more, etc. The data stored here reflects that and gives higher priority to those types of possibilities.

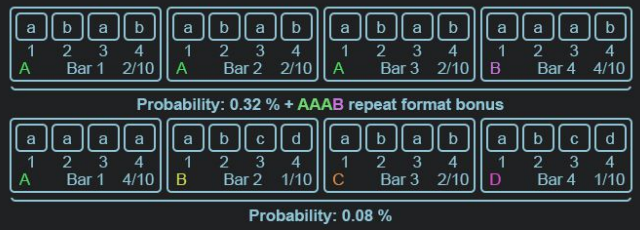


Example: Building rhythmic patterns; some patterns are prefered over the others.

When building bars from smaller blocks we have almost an infinite number of possibilities. But they're not all the same musically. The algorithm uses the database #2 to bring order to the chaos and build a solid bar structure that is more likely to resemble what humans do and find more pleasing.

B.3. Building a combination of bars

Database #3: Helps the algorithm structure better combination of bars by providing a set of rules and a probability bank prioritizing more preferable possibilities over the others.



Example: Building bar combos; some combos are preferred over the others.

By combining individual bars generated in the previous step and using the database #3 as a guide, the algorithm generates the final rhythm part for the entire loop. We are now ready to move to the next step.

C. Generating pitch

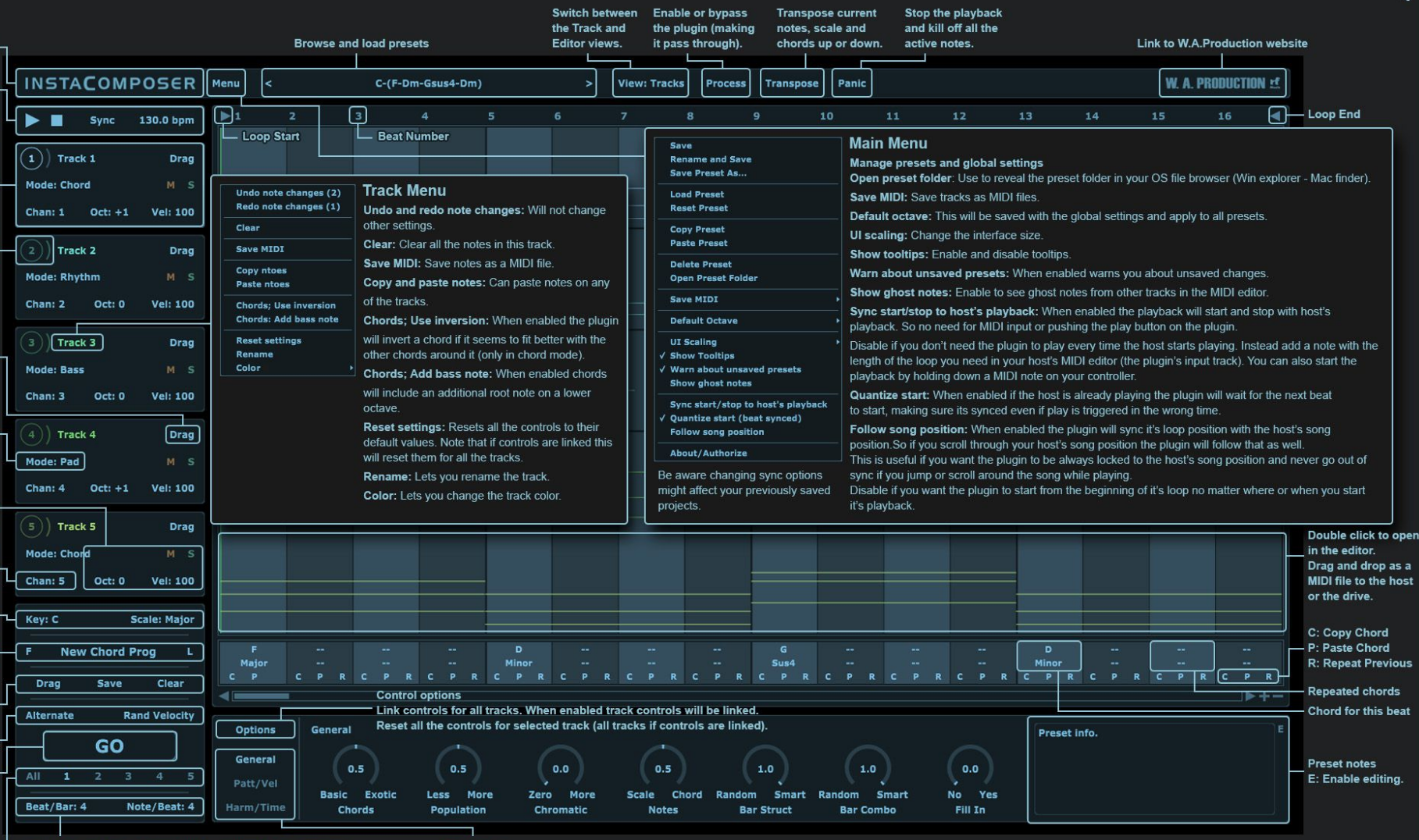
This is where the algorithm generates the pitch for the notes and cerates the final melody. A lot of possibilities, but picking just random notes is not going to make a nice melody.

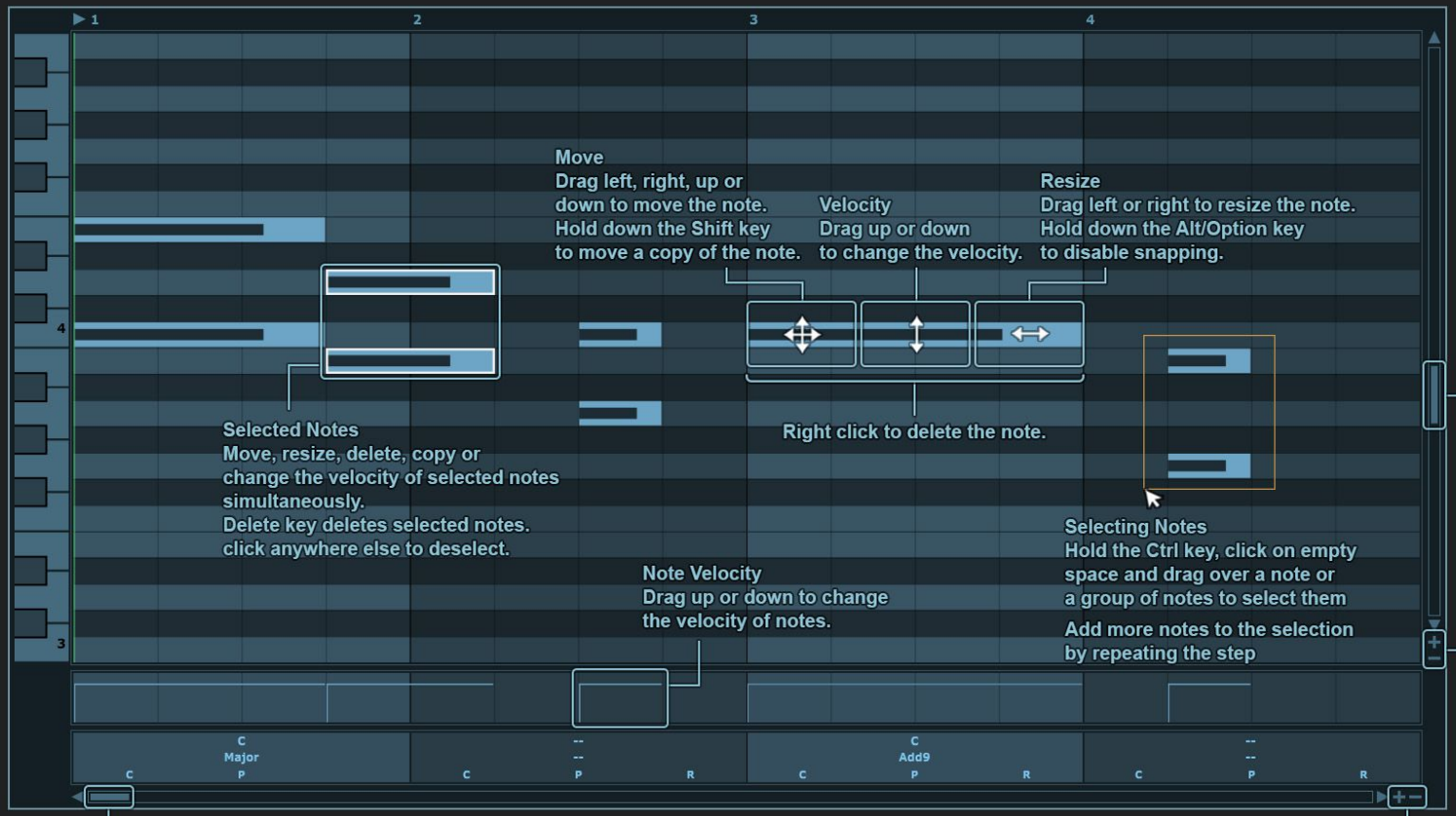
Database#4: Helps the algorithm make better melodies by providing the necessary rules and a probability bank prioritizing more preferable choices over the others. This includes information about different scales, harmonies, chords and some methods to make motifs, patterns, phrases and sentences. We also have several generation types (riff, rhythm, pad, etc.) each with their own characteristics that are defined and stored in here.

Compared to the rhythm section there are even more steps, rules and data that are used when generating the final melody. The algorithm uses all this information to pick notes that are more likely to sit nicely on top of the chords underneath, fit well with the other notes around and serve a purpose as a whole. There are few post processing steps at the end to check and polish everything and output the result. Using the available controls users can also dramatically alter the behavior and give directions to the AI.

We won't get into more details since some information are considered confidential, but the goal is to use what the AI has learned from training data to generate melodies that are as close as possible to what a human might create. Over time and with new updates we should be able to have and even smarter and more capable versions of the plugin.

The Main Interface




1
2
3
4
Move
Drag left, right, up or down to move the note. Hold down the Shift key to move a copy of the note.
Velocity
Drag up or down to change the velocity.
Resize
Drag left or right to resize the note. Hold down the Alt/Option key to disable snapping.
Selected Notes
Move, resize, delete, copy or change the velocity of selected notes simultaneously.
Delete key deletes selected notes.
click anywhere else to deselect.
Right click to delete the note.
Note Velocity
Drag up or down to change the velocity of notes.
Selecting Notes
Hold the Ctrl key, click on empty space and drag over a note or a group of notes to select them
Add more notes to the selection by repeating the step
Vertical Scroll
Use the mouse wheel to scroll up or down.
Vertical Zoom
Hold down the Alt/Option key and use the mouse wheel to zoom in or out.
C
Major
C
Add9
Horizontal Scroll
Hold down the Shift key and use the mouse wheel to scroll left or right.
Horizontal Zoom
Hold down the Ctrl key and use the mouse wheel to zoom in or out.

Probability controls
These controls alter the decision making process by changing the probabilities.

Chromatic Notes
Controls the probability of adding chromatic notes that are not necessarily in the selected scale.

Bar Structure: Random

Bar Structure: Smart

Bar Structure
With lower values the probability of generating more random combination of beats increases.
With higher values the probability of structuring bars based on patterns and repetition increases.
Random: Different beats, so more complex and chaotic bars.
Smart: More intelligently structured combination of beats.


Highlighted notes filling the gaps

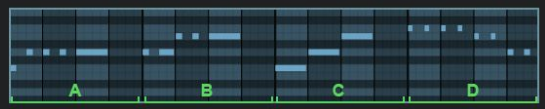
Fill In
This is a secondary step that fills in the gaps between generated notes.
No: No extra notes will be added.
Yes: Will fill in all the gaps.

Chord Complexity
(Used by chord progression generator)
With lower values the probability of picking more basic chord shapes like Major or Minor increases.
With higher values the probability of picking fancier or less commonly used chords like 11th increases.

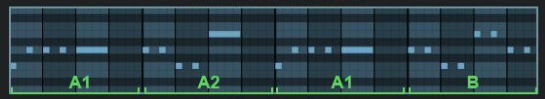
Note Population
With lower values the probability of generating less notes increases.
With higher values the probability of generating more notes increases.

Note Selecting
With lower values the probability of picking any note from the scale increases.
With higher values the probability of picking notes just from the chord increases.

Bar Combination
With lower values the probability of structuring more random combination of bars increases.
With higher values the probability of structuring bar combos based on patterns and repetition increases.
Random: Mostly different bars.
Smart: More intelligently structured bars that produce similar or repeating bars.



Bar Combo: Random

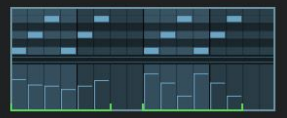


Bar Combo: Smart

Pattern and Motif
A set of notes and ideas that keep repeating and occurring through out the melody, possibly getting slightly altered each time.

Number of Repeats
With lower values the probability of generating smaller number of repeats increase.
With higher values the probability of generating larger number of repeats increase.

Randomize Velocity
With lower values the probability of generating variable velocity values decreases.
With higher values the probability of generating variable velocity values increases.



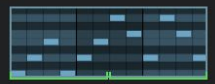
Follow Patterns
If the algorithm have generated repeating patterns, velocity values can follow the same patterns as well.
With lower values the probability of following patterns decreases.
With higher values the probability of following patterns increases.

Add Pattern
With lower values the probability of adding patterns decreases.
With higher values the probability of generating patterns increases.

A 4 note pattern repeating 4 times

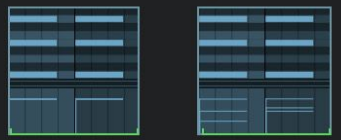
Pattern Length
With lower values the probability of generating shorter patterns increases.
With higher values the probability of generating longer patterns increases.

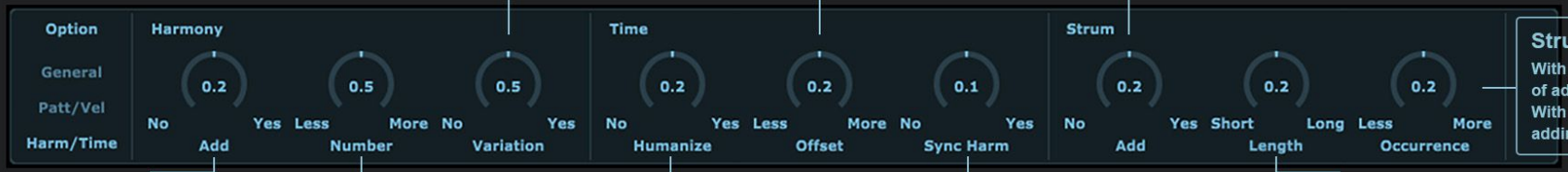
Pattern Variation
With lower values the probability of generating more than one pattern decreases.
With higher values the probability of generating more than one pattern increases.

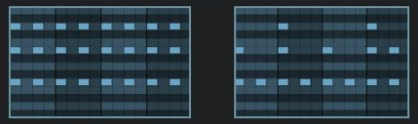


Multiplier Range
With lower values the probability of generating wider range of velocity values decreases.
With higher values the probability of generating wider range of velocity values increases.

Harmony: Random Velocity
With lower values the probability of linking velocity values for all the harmonies increases.
With lower values the probability of generating different velocity values for each harmony increases.







Variation

With lower values the probability of generating variable number of harmonies decrease.
With higher values the probability of generating variable number of harmonies increase.
No: fixed number of harmonies.
Yes: variable number of harmonies.

Offset Time

With lower values the probability of generating shorter offsets increases.
With higher values the probability of generating longer offsets increases.

Strumming

With lower values the probability of strumming the stacked notes decreases.
With lower values the probability of strumming the stacked notes increases.

Strum Occurrence

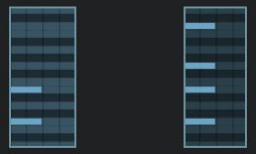
With lower values the probability of adding less strums increases.
With higher the probability of adding more strums increases.

Add Harmony

With lower values the probability of adding harmonies decreases.
With higher values the probability of adding harmonies increases.

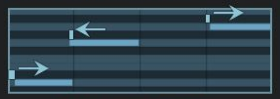
Number of harmonies

With lower values the probability of adding less harmonies increases.
With higher values the probability of adding more harmonies increases.



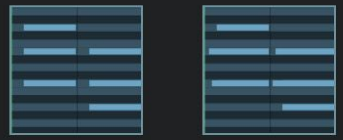
Humanize Timing

Slightly offsets notes in time.
With lower values the probability of adding offsets decreases.
With higher values the probability of adding offsets increases.



Sync Harmonies

With lower values the probability of syncing offsets for harmonies decreases.
With higher values the probability of syncing offsets for harmonies increases.
No: Each harmony will have its own offset.
Yes: Harmonies will have the same offset.



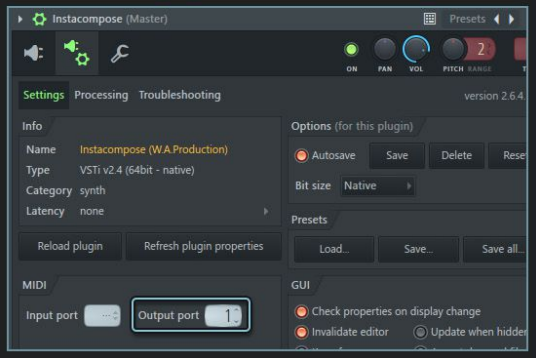
Strum Length

With lower values the probability of generating shorter strums increases.
With higher values the probability of generating longer strums increases.

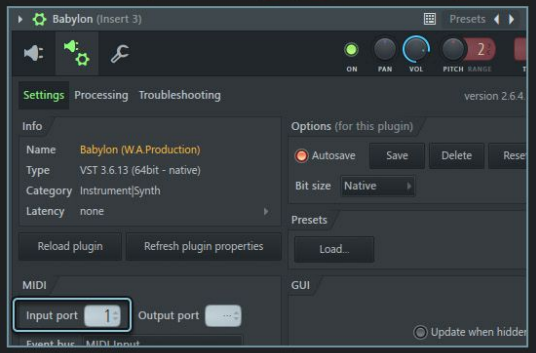
FL Studio

1. Load the plugin as a VST instrument and navigate to the wrapper settings.

2. Set the MIDI output port to one of the available ports.



3. Set the MIDI input on the target plugin to the same port.



Pro Tools

1. Add the plugin as an instrument track.
2. Add the target instrument.
3. Add a MIDI track.
4. Use the MIDI track to route the MIDI I/O.

Ableton Live

1. Add the plugin on a MIDI track.
2. Add the target instrument on a second MIDI track.
3. Set the MIDI input option on the target instrument to receive MIDI from the InstaComposer.
4. Set the Monitor on the target instrument track to IN.
5. Arm the InstaComposer track.

Cubase

1. Add the plugin as an Instrument track.
2. Add the target instrument.
3. Set the MIDI input option on the target instrument to receive MIDI from the plugin.

Logic Pro

1. Add a target instrument on a new track.
2. Insert instaComposer as a MIDI effect plugin.

Reaper

1. Add the plugin as an Instrument track.
2. Add the target instrument.
3. Set the send option on InstaComposer to send MIDI to the target instrument.

There are similar ways to use MIDI FX plugins in other DAWs.
Please refer to your host's manual to see how to route and use MIDI FX plugins.

To get the most out of the plugin, you can connect each track to a different instrument or number of instruments.

A. With A Single Plugin

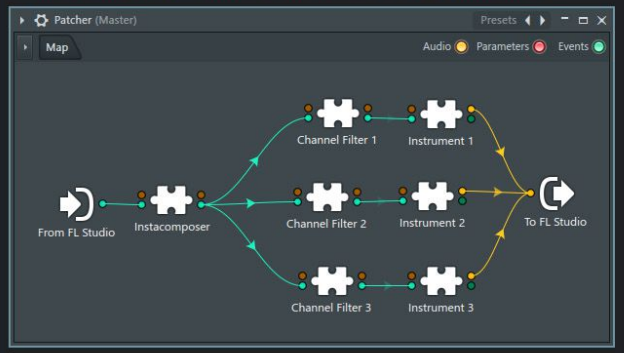
Using a multi-channel plugin like Kontakt (or any other similar plugins). you can load multiple instruments and route them to different MIDI channels. Notice that some DAWs like Ableton might not natively support multi-channel MIDI routing. Please make sure this is possible in your DAW. In most cases there are workarounds deponding on the host.

B. With Multiple Plugins

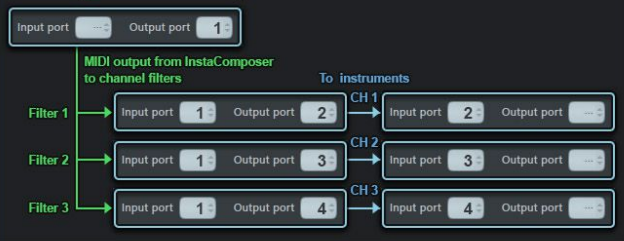
There are few ways to connect the plugin to multiple instruments. The details will depend on the host and the plugins used, but the goal is to route each MIDI channel to a different instrument track.

If neighter the host nor the target instrument had a feature to specify a MIDI channel to use, we can use a channel filter plugin to do the job. We're using FL Studio in our example, but the concept is the same and there should be similar routing mechanisms in most DAWs.

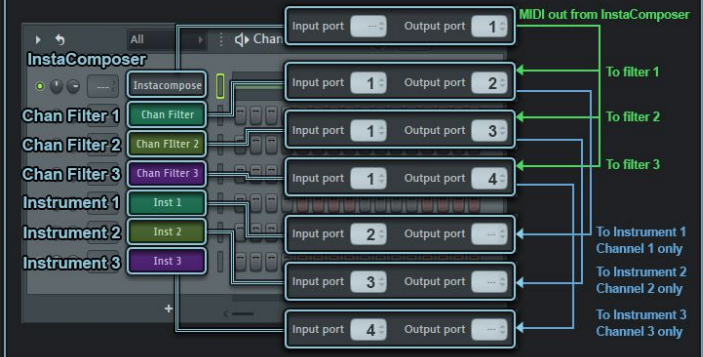
In the example below we're using the Patcher tool inside FL Studio, which should help visualize the connections a little bit better.
You can see how we have connected InstaComposer to 3 different instrument plugins. We're using a channel filter plugin before each instrument. They all receive the same MIDI data but only allow a certain channel to pass through and reach the target instrument.



Don't forget to set the MIDI ports as well.



We don't actually need a tool like Patcher to set things up (except when working with native FL plugins). In this example we have loaded all the instruments the usual way and set the MIDI ports like the previous example.



System Requirements

- Windows. Check the product page at waproduction.com
- MacOS. Check the product page at waproduction.com
- CPU: Multicore 2GHz or higher
- RAM: 2GB or higher
- Display Resolution: 1920x1080 or higher

The plugin can be used with VST, AU and AAX host applications and it comes with both 32 and 64 bit versions for Windows and universal and ARM versions for macOS. Please refer to your host's manual to see how to load a third party instrument plugin.

Note: Running on older systems might be possible but is not guaranteed. Please try the demo version before buying the plugin to make sure it's compatible with your system.

Installation

Run the installer and follow the instructions to install the plugin.

Common locations on Windows:

VST 32bit: 'C:\Program Files (x86)\vstplugins'
VST 64bit: 'C:\Program Files\vstplugins'
VST3 32bit: 'C:\Program Files (x86)\\Common Files\VST3'
VST3 64bit: 'C:\Program Files\Common Files\VST3'
AAX 32bit: 'C:\Program Files (x86)\Common Files\Avid\Audio\Plug-Ins'
AAX 64bit: 'C:\Program Files\Common Files\Avid\Audio\Plug-Ins'

Common locations on macOS:

VST2: 'Library/Audio/Plugins/VST'
VST3: 'Library/Audio/Plug-ins/VST3'
AU: 'Library/Audio/Plugins/Components'
AAX: 'Library/Application Support/Avid/Audio/Plug-Ins'

Note: InstaComposer creates a folder named 'WAProduction/Instacomposer' inside application folder when loaded the first time.

Note: AU Version is not an instrument plugin like the VST version. It's a MIDI effect plugin and can only be used by hosts like Logic Pro that supports the type. In hosts like Ableton Live and Reaper that support both AU and VST plugins, use the VST version.

Note: Make sure your VST host supports MIDI routing for third party plugins.

Installing Presets

WIN: The presets will be installed with the main installer.
Use the "Open Preset Folder" from the menu to reveal the preset folder in the Windows explorer and manage them manually.

MAC: Run the preset installer to install the presets. If the presets didn't came with an installer, you can copy and paste the presets into the plugin's preset folder manually. Use the 'Open Preset Folder' option from the plugin's menu to reveal the correct folder.

Demo Version Limitations

The plugin will not to load presets and saved settings with the projects.
Only 10 melodies can be generated before having to reload the plugin.
Only the C Major scale is available and only two tracks can be used.

Authorization

If you have purchased the plugin and finished the payment process, you'll receive the information you need to get the full version.
Please contact **info@waproduction.com** if you have any questions.

Credits

Code and graphics by Rahman Fotouhi
Website: rfmusic.net
Email: info@rfmusic.net

Version 1.0.0 released in September 2021.