

# Settings Manual

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Here we give you an explanation of what each parameter in the configuration file config.py corresponds to, so that you can be clearer when you modify it.

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## Screen related parameters

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screen\_size: screen size (width, height)

background\_image: background image file path

background\_size: background image size

piano\_image: piano image file path

piano\_size: piano image size

message\_color: font color for chord display, formatted as (R, G, B, A)

fonts\_size: font size

label1\_place: text position of the currently played note name

label2\_place: text position of the chord name

label3\_place: text position of the status of the midi file being played

label\_anchor\_x: horizontal alignment of the text

label\_anchor\_y: vertical alignment of the text

fonts: font name

bold: whether to bold the text

notes\_image: the path to the image of the notes in note point mode

notes\_resize\_num: the scaling size of the note points

go\_back\_image: Returns the button's image file path

go\_back\_place: Returns the image location of the button

self\_play\_image: the image file path of the computer keyboard's play button

self\_play\_place: The location of the computer keyboard play button image

self\_midi\_image: the image file path of the midi keyboard play button

self\_midi\_place: The location of the midi keyboard play button image

play\_midi\_image: the image file path of the play midi file button

play\_midi\_place: the image location of the play midi file button

key\_settings: The dictionary of the 88 keys of the computer keyboard, please note that all the files in the sound path must contain the keys you have set to

midi\_device\_id: This parameter is the id of the midi device after it is connected to the midi device (e.g. midi keyboard)

## pygame mixer initialization parameters

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frequency, size, channel, buffer, maximum\_channels

## Keyboard playing and MIDI files playing parameters

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pause\_key: key to pause

repeat\_key: key to repeat playback

unpause\_key: key to continue (while paused)

exit\_key: key to exit the program

global\_volume: total volume, max 1, min 0

delay: whether to give a certain delay to the tone after it is released

delay\_time: the delay time (in seconds)

fadeout\_ms: the time in milliseconds to fade out after the note is played

touch\_interval: the interval between the end of a note and its replay when the same note is played continuously, in seconds

pause\_key\_clear\_notes: whether to clear the display of all currently played notes when pausing

delay\_only\_read\_current: When a note is delayed (not pressed), the chord judgment does not include those notes that are still delayed, only those that are currently pressed

sound\_format: the file format of the sound source (file extension)

sound\_path: the file path of the sound source

show\_delay\_time: the delay time of the notes when playing the midi file

config\_enable: whether to enable function keys when playing on computer keyboard

config\_key: the key position of the function keys, the function keys can be used with other keys to do different functions

volume\_up: the key to use with the function keys to raise the total volume

volume\_down: the key that is used with the function key to lower the volume

volume\_change\_unit: the volume of the total volume that changes each time

change\_delay: The key used with the function key to change the delay or not

change\_read\_current: The key used with the function key to change whether only the currently pressed chord is judged

change\_pause\_key\_clear\_notes: key used with function keys to change whether the display of the currently played note is cleared when paused

note\_place: The position of all keys on the piano from left to right in note point mode

load\_sound: whether to load the sound source and play it when playing (set to False when using with the host)

show\_key: whether to show the name of the keys of the computer keyboard when playing on it

show\_chord: Whether or not the chord is analyzed in real time by musical logic

show\_notes: whether to show the current notes in real time when playing

get\_off\_drums: If True, in midi playback mode, if you choose to merge all tracks, the drum tracks will be removed after the midi file is read (if any) to avoid the demo chords being scrambled by the drum notes.

sort\_invisible: if True, the sorted content will not be shown in the display chords (e.g. `Fmaj7 sort` as `[2,3,1,4]` will become `Fmaj7`)

play\_as\_midi: play the midi file without loading the source, and play the midi file directly inside the software (with the source that comes with the midi), the advantage is that the midi file with more notes loads much faster, and it won't stutter when playing a lot of notes and complex chord types at the same time. Set to True to enter this mode.

pitch\_range: A tuple of two pitch strings, which filters out the notes between them when reading a MIDI file, to prevent the notes from exceeding the pitch range set by the piano.

soft\_pedal\_volume: The ratio of the reduction of the volume of the notes when the weak pedal is pressed in MIDI keyboard playing mode, a decimal number between 0 and 1

## Chord analysis parameters

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These are the parameters of the chord logic algorithm, the default settings are the most widely used, so if I want to explain what they mean, I may need to understand my algorithm first, so I will explain this part later when I introduce it

detect\_mode = 'chord'

inv\_num = False

rootpitch = 5

change\_from\_first = True

original\_first = True

same\_note\_special = False

whole\_detect = True (changing this parameter to `False` will improve the speed of real-time analysis, but very complex chords may not be analyzed)

return\_from\_chord = False

two\_show\_interval = True

poly\_chord\_first = False

# Parameters of the algorithm for separating the main melody of a piece

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melody\_tol, chord\_tol, get\_off\_overlap\_notes, average\_degree\_length, melody\_degree\_tol

## Note display related parameters

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note\_mode: Select the note display mode, currently there are three modes to choose from: note dots and note bars (rising) and note bars (falling, only available in midi file mode), corresponding to 'dots' and 'bars' and 'bars drop' respectively

bar\_width: the width of the note bar

bar\_height: the length of the note bar

bar\_color: the color of the bar, RGB tuple

sustain\_bar\_color: the color of the bar when the key is released while the piano pedal is pressed in MIDI keyboard play mode, RGB tuple

bar\_y: the vertical coordinate of the bar's appearance

bar\_offset\_x: the pixel value of the horizontal coordinate of the note bar that deviates from the note point

bar\_opacity: the transparency of the note bar, from 0 to 255, from fully transparent to fully opaque

opacity\_change\_by\_velocity: if or not the transparency of the bar changes according to the keypress force, the lighter the keypress force, the more transparent the bar is, the heavier the keypress force, the more opaque the bar is

color\_mode: the color mode of the note bar, currently there are two modes to choose from, monochrome and random, corresponding to 'normal' and 'rainbow' respectively (actually, you can fill in other text that is not normal)

bar\_steps: the number of pixels the note bar moves each time it rises

bar\_unit: the length of the note bar in units for calculating the relative length when playing midi files

bar\_hold\_increase: The number of pixels that the note bar lengthens each time a key is held down (or a computer key is held down)

bars\_drop\_interval: in note bar (drop) mode, how long it takes for the bar to drop from the top of the screen to the specified position, in seconds

bars\_drop\_place: the specified position (height) that the note bar will drop to in note drop mode

adjust\_ratio: A parameter that adjusts the accuracy of the bar drop to the specified position, generally not needed

bar\_border: the width of the bar's border

bar\_border\_color: the border color of the note bar, it is the RGB tuple, `(R, G, B)`.

## Piano keyboard related parameters

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**draw\_piano\_keys:** set to True to enter the draw piano mode, (according to the parameters and the structure of the piano 88 keys to draw the piano keyboard, replacing the previous piano picture) In the draw piano mode, the corresponding keys will light up when the midi keyboard is played or the computer keyboard is played, including when the midi file is played in drop note mode, the notes will also light up when they land on the keys. The piano is drawn using black and white keys that directly follow the structure of the piano's 88 keys, according to settable parameters, and each key can change color. Underneath the drawing of the 88 keys there is a black background image, which is mainly used to show the gaps between the piano keys (for filling). You can turn off note mode (note\_mode can be set to a value other than dots, bars, bars drop) and just turn on draw piano mode, the corresponding piano key will be lit up when playing and the current note will be lit up when playing the midi file. It is also possible to use any of the note modes and turn on draw piano mode.

**white\_key\_width:** the width of the piano's white keys (horizontal length)

**white\_key\_height:** the height of the piano's white keys (vertical length)

**white\_key\_interval:** the distance between every two white keys of the piano

**white\_key\_y:** the height position of the piano's white keys

**white\_keys\_number:** the number of white keys of the piano

**white\_key\_start\_x:** the horizontal position of the first white key of the piano

**white\_key\_color:** the color of the piano's white keys

**black\_key\_width:** the width (horizontal length) of the piano's black keys

**black\_key\_height:** the height of the piano's black key (vertical length)

**black\_key\_y:** the height position of the piano's black key

**black\_key\_first\_x:** horizontal position of the first black key of the piano

**black\_key\_start\_x:** horizontal position of the second black key of the piano

**black\_key\_color:** the color of the piano's black keys

**black\_keys\_set:** the relative interval between each black key in each group, except for the first black key, which is set individually, in groups of 5 (the first interval is usually 0, which means that the first black key starts from the leftmost relative position in the current group)

**black\_keys\_set\_interval:** the interval between every two black keysets

**black\_keys\_set\_num:** the number of black keysets

**piano\_background\_image:** the background image under the piano (to fill the gap)

**piano\_key\_border:** the width of the piano's keyboard border

**piano\_key\_border\_color:** piano\_key\_border\_color, RGB tuple, (R, G, B)

## SoundFont file related parameters

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**use\_soundfont:** Whether to use SoundFont files to play MIDI files

**play\_use\_soundfont:** Whether to use the SoundFont file when playing on a computer keyboard or a MIDI keyboard

**sf2\_path:** The path to the SoundFont file

**bank\_num:** the bank number of the SoundFont file

preset\_num: the preset number of the SoundFont file

sf2\_duration: the length of the notes generated by the SoundFont file, in seconds

sf2\_decay: the fade-out time of the notes generated by the SoundFont file, in seconds

sf2\_volume: the volume of the note generated by the SoundFont file, in units of MIDI note strength

use\_soundfont: whether to use SoundFont files to play MIDI files

sf2\_path: path to the SoundFont file

## Show composition analysis

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Ideal Piano can read a text file with a composition analysis in a specific format, and display the composition techniques such as modulation, subordinate chords, borrowed chords, etc. in the demo midi file mode according to the number of bars in the current composition. The default file is musical analysis.txt.

The format of the composition analysis file is

Number of bars1

Composition analysis content1

Number of bars 2

Composition analysis content 2

Number of bars 3

Composition Analysis 3

...

The number of bars here starts with bar 1, and the number of bars is a number, either an integer or a decimal. The composition analysis content is the content you want to display when you reach the specified number of bars. The software will parse the composition analysis file format and find the position of the first note up to the current number of bars, and then display the corresponding composition content when it reaches the corresponding note position during the demo.

Currently, in addition to this format, it also supports displaying the tonicity, so that you can display the current tonicity at any position, and if the piece has a modulation, you can write the tonicity statement before the beginning bar of the modulation. The syntax is (here is an example)

key: Tone 1 (you can write anything you want here, such as A major, A major, etc.)

Number of bars 1

Composition analysis content 1

Number of bars 2

Composition analysis content 2

Number of bars 3

Composition analysis 3

key: key 2 (you can write a new key when the piece is modulated)

Number of bars n

Composition analysis content n

Number of bars x

Composition analysis content x

Number of bars y

Composition analysis content y

...

(The phrase indicating the tonality must be separated from the measure statement by one line, and a measure statement must be adjacent to the corresponding composition analysis statement on the top and bottom of the line, together called a measure block. (Multiple lines can be written within a composition analysis statement, but there must not be a completely empty line in between))

(The number of bars supports both absolute bar position and relative bar position syntax, absolute bar position is a number, which can be an integer or a decimal, relative bar position syntax is + relative bar length, for example, +1 means the position of the next bar relative to the previous position, +1/2 means the position of the next one-half bar relative to the previous position, relative bar position supports integers, decimals and fractions.)

In order to be able to quickly input a large number of compositional analysis statements, especially when analyzing a piece with complex chord progressions, I myself generally write the latest 4-5 chords and divide them into 4-5 bar blocks, putting an arrow in front of the chord when each bar block reaches one of the chords, with different compositional techniques explained below, such as

+1

Emaj9(omit 3) | D#m7 | DM7 | → C#11(omit 3)

IVM9 iii7 bIIIM7 V11 (F# major)

You can use the editor of [music analysis batch language](#) to generate music theory analysis statements according to the batch syntax of README .

Using this batch syntax I designed, you can input a large number of music analysis statements very concisely and quickly, and the syntax of the music analysis statements itself is very comfortable for non-programmers to read directly. So you can also use this special batch statement as a small programming language to write chord function analysis, I think it's still very

good :D

## Related parameters

show\_music\_analysis: whether to turn on the display of the composition analysis

music\_analysis\_file: the file path of the composition analysis file to read

music\_analysis\_place: set the position of the composition content to be displayed

key\_header: the beginning of the key (this parameter shows the beginning of the key, e.g. "current key:")

music\_analysis\_width: the width of the music analysis text label

music\_analysis\_fonts\_size: the font size of the music analysis text

use\_track\_colors: whether to use different colors on different tracks and instruments

tracks\_colors: list of colors for different tracks and instruments, RGB parameter

use\_default\_tracks\_colors: whether to use set track colors or use randomly generated colors for different tracks