

# 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

width\_or\_height\_first: fill with width or height

background\_fix\_original\_ratio: whether to adjust background image according to the original size ratio

background\_opacity: the transparency of background image, from 0 to 255 (transparent to non-transparent)

background\_place: position of background image on the screen

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

label\_width: max width of the label

fonts: font name

bold: whether to bold the text

go\_back\_image: the image file path of go back button

go\_back\_place: the position of go back button

self\_play\_image: the image file path of play button

self\_play\_place: the position of play button

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

self\_midi\_place: the position of MIDI keyboard button

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

play\_midi\_place: the position of play MIDI button

settings\_image: the image file path of settings button

settings\_place: the position of settings button

button\_resize\_num: the resize ratio of button size

button\_opacity: the opacity of button

fps: frames per second of the screen

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 input port id of the MIDI device after it is connected to the MIDI device (e.g. MIDI keyboard)

play\_midi\_port: the MIDI output port id when playing MIDI files

language: the display language of the software, including main window buttons, chord names, messages and the window to choose MIDI files, currently only 'English' and 'Chinese' are supported

## **pygame mixer initialization parameters**

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frequency, size, channel, buffer, max\_num\_channels, global\_volume

(please refer to pygame's mixer module documentation online)

## **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)

move\_progress\_left\_key: button to move the progress bar backward

move\_progress\_right\_key: button to move the progress bar forward

move\_progress\_left\_unit: seconds for each move progress bar backward

move\_progress\_right\_unit: seconds for each move progress bar forward

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

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

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

play\_midi\_start\_process\_time: time in seconds to open the process that sends MIDI events when playing MIDI files

move\_progress\_adjust\_time: the delay time in seconds when changing the progress bar

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

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

show\_notes\_delay: the delay of the display of currently playing notes and chord types relative to the notes played

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`)

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

inv\_num = False

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

poly\_chord\_first = False

root\_position\_return\_first = True

alter\_notes\_show\_degree = True

## 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 2 modes to choose from: note bars rising and note bars falling (only available in MIDI file mode), corresponding to '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

progress\_bar\_color: the color of progress bar

progress\_bar\_opacity: the opacity of progress bar

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)`.

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

show\_chord\_accidentals: show notes and chord types in sharp or flat accidentals, the values could be `'sharp'` or `'flat'`, the default value is `'sharp'`

show\_chord\_details: whether to show chord details of current chord you are playing

chord\_details\_label\_place: text position of chord details

chord\_details\_label\_anchor\_x: horizontal alignment of chord details

chord\_details\_label\_anchor\_y: vertical alignment of chord details

chord\_details\_font\_size: font size of chord details

chord\_details\_label\_width: max width of chord details

show\_current\_detect\_key: whether to analyze and show some of the most possible keys you are currently playing (this functionality is experimental and still under development)

current\_detect\_key\_show\_note\_count: whether to show current notes counts

current\_detect\_key\_label\_place: text position of current key

current\_detect\_key\_label\_anchor\_x: horizontal alignment of current key

current\_detect\_key\_label\_anchor\_y: vertical alignment of current key

current\_detect\_key\_font\_size: font size of current key

current\_detect\_key\_label\_width: max width of current key

current\_detect\_key\_algorithm: the key analysis algorithm to use, currently there are 3 algorithms to choose, corresponding to 0, 1, 2

current\_detect\_key\_major\_minor\_preference: config parameter of current key analysis function, whether to put major and minor as the most possible result

current\_detect\_key\_most\_appear\_num : config parameter of current key analysis function, the number of possible keys

current\_detect\_key\_limit: the max number of notes to analyze when playing, if current number of notes exceed this limit, then clear the temp

current\_detect\_key\_unit: the unit in bars to slice a piece in ranges, for the third key analysis algorithm (detect\_scale3)

current\_detect\_key\_key\_accuracy\_tol: the minimum accuracy in float of percentage of a part of piece to be detected as a key, for the third key analysis algorithm (detect\_scale3)

## Piano keyboard related parameters

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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

white\_key\_opacity: the opacity of 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\_key\_opacity: the opacity of 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

show\_note\_name\_on\_piano\_key: show note name on piano keys or not

show\_only\_start\_note\_name: show only note names with C or all white keys note names on piano keys

piano\_key\_note\_name\_font\_size: font size of note names on piano keys

piano\_key\_note\_name\_bold: bold or not of note names on piano keys

piano\_key\_note\_name\_color: color of note names on piano keys

piano\_key\_note\_name\_pad\_x: x padding of note names on piano keys

piano\_key\_note\_name\_pad\_y: y padding of note names on piano keys

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

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

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

piano\_background\_opacity: the opacity of piano background image

## SoundFont file related parameters

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use\_soundfont: Whether to use SoundFont files to play MIDI files, when this is set to True, rendering the MIDI file to be played to audio with the loaded SoundFont file to play when playing the MIDI file

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

sf2\_path: The path of the SoundFont file

bank: the bank number of the SoundFont file

preset: 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 velocity

sf2\_path: path to the SoundFont file

sf2\_mode: on some computers you need to set this to 1 to play using SoundFont files without crashing

## 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