deCoda v1.0 User Manual

December 3, 2019

Contents

1 Introduction

deCoda is an easy to use app for music transcription, instrument learning and practicing. The main idea of deCoda is to minimize the time to get you started to learn your song and play your instrument. Using deCoda is as simple as adding your favourite song and letting deCoda help you figure it out. In a snap deCoda tells you the key, tempo, chords where the verses and choruses are and more. You can slow things down or speed them up, change the key and add a metronome. If you need to focus in on an instrument, then use the Focus mode to highlight that instrument. Or flip it to remove the instrument so you can practice with the backing track.

deCoda has currently 3 sections accessible via the burger menu on the top left: Current Project, Project History and Settings.
This manual is stuctured accordingly. A fourth chapter will give some additional information.

2 Current project

Figure 2.1: main view

This is the main view that shows the currently loaded project, i.e. the currently loaded song. It is built around the loop view in the center which represents the currently selected loop in two different ways: as waveform and as piano roll.

Around the loop view there is the project overview on the top, the sidebar on the right and the play bar on the bottom.

2.1 Project overview
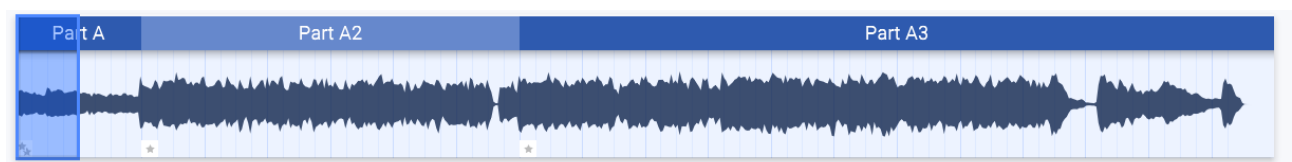
Project overview

The overview (see A in figure 2.1) shows the waveform representation of the loaded song. The parts of the song are represented by alternating colored areas and the part label. The currently selected loop is represented by a thick frame around the loop bounds.

It is expandable/collapsible using the arrow button under the right left corner of the overview. When expanded, it additionally shows bar lines and bookmarks.

2.2 Navigation
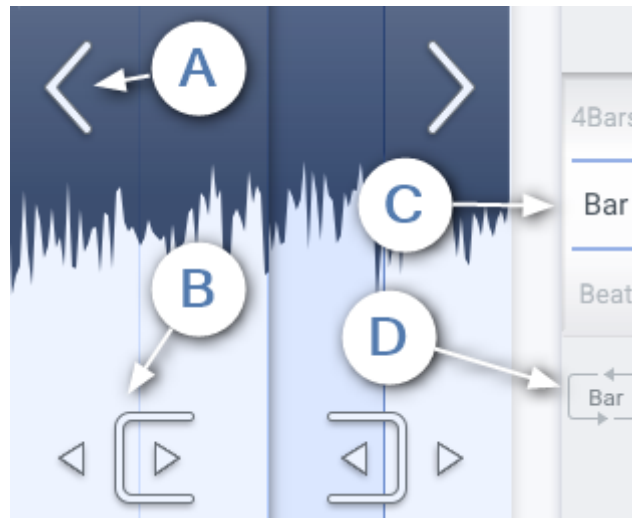
Figure 2.2: Navigation controls

Navigation in deCoda is done in a musically meaningful way, i.e. you navigate to bars and beats instead to a time position in minutes and seconds.

All navigation operations manipulate the currently selected loop bounds (from here referred to as "the loop").

2.2.1 Step size

Most navigation operations use a step size, which can be one of *Part*, *4Bar*, *Bar* or *Beat*. The currently selected step size is displayed as a wheel control in the middle of the right sidebar (see B in figure 2.1).

2.2.2 Navigation operations

Move left/right
Shifts the loop start left or right according to the step size. The loop length is not modified. The only exception is when the step size is set to Part and exactly one part was selected. Then moving left or right selects the next part to the left or right.
(see A in figure 2.2)
Reduce/expand loop left/right
Reduces or expands the loop on the left or right according to the step size.
(see B in figure 2.2)

Increase/decrease step size
> Increases or decreases the currently selected step size.
> (see C in figure 2.2 and B in 2.1)

Apply step size to loop length
> Sets the end of the loop so that the loop length is exactly 1 step size unit.
> (see D in figure 2.2)

2.2.3 Ways to perform navigation operations

deCoda is designed to be controlled using mainly the keyboard. All keyboard shortcuts can be configured in the settings page.

However, you can also use your mouse to navigate through the song. In the loop view, click on the big arrow icons to move the loop or click on the small arrow icons on the bottom to reduce or expand the loop. The loop can also be moved by dragging the loop view to the left or right.

You can change the step size by dragging or scrolling the step size wheel in the right sidebar. Clicking the button below the step size wheel applies the step size to the loop length.

The step size can also be changed by hovering over the loop view and moving the mouse scroll view. Note that this automatically applies the step size to the loop length.

You can also click on a location the project overview to move the loop to this location.

While playing back, clicking on the loop view or inside the current loop frame on the project overview sets the play cursor to the clicked position.

There are also touch gestures available on the loop view for most navigation operations:

Drag left or right
> Move the loop continuously.

Swipe left or right
> Move the loop according to the step size (the same as clicking the big left or right arrows).

Swipe left or right with 2 fingers
> Expand or reduce the loop on the right according to the step size.

Swipe up or down
> Change the step size and automatically apply the new step size to the loop length.

Horizontal pinch
> Change the step size and automatically apply the new step size to the loop length.

Drag up or down (piano roll view only)
> Vertically shift the range of visible notes.

Vertical pinch (piano roll view only)
> Vertically zoom the range of visible notes.

2.2.4 Quick zoom

At any time you can quickly zoom to a specific bar by double-clicking in the loop view. The loop will be set to the bar you clicked on. If you don't change the length of the loop, you can again double-click in the loop view to reset the loop bounds to what they were set before.

2.3 Playback controls

F MIN	�			▶		Oct	1/4	1/2	3/4	1	80 BPM

Playback controls

There are some ways to affect the song playback.

Playback speed in beats per minute (bpm)
Slow down the playback to better hear what's going on.

Playback key
deCoda automatically detects the song key. You can transpose the whole playback up or down to adjust for your voice range, guitar tuning, etc.

Octave up
Pitch up the playback by one octave. This is intended to help with identifying really low bass notes which might not be audible well on small speakers.

Play to end
The main playback mode in deCoda is to always loop the selected loop area. However, you can switch to *Play to end* mode to listen from the start of the selected loop area to the end of the song. This can be set by right-clicking or long-pressing on the play button and selecting the ▶· icon.

2.3.1 Temporary loop and playback start position

Normally the loop you see is the loop you hear. But sometimes you may want to temporarily loop a small section of the loop you see. This can be done by clicking and dragging in the bar number area to span temporary loop markers. The temporary loop can be reset by clicking on the bar number area again.

Instead of setting a temporary loop you can also set only the playback start position by clicking on the bar number area without dragging.

As soon as you change the visible loop (e.g. navigating to the next part, etc) the temporary loop or the temporary playback start position is reset automatically.

2.4 Metronome

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Metronome button

deCoda automatically detects the position of bars and beats. This aids not only with navigation in a musically meaningful way but also enables deCoda to play metronome clicks.

This can be especially helpful if you slow down the playback e.g. to hear single notes of a fast passage. Hearing the metronome clicks can give you the context of the musical time grid that might be lost otherwise with really slow playback speeds.

The metronome settings can be accessed by right-clicking or long-pressing on the metronome button.
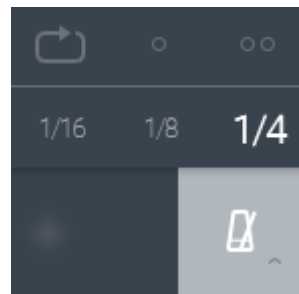
Metronome submenu

Metronome grid

> The metronome grid can be set to 1/4, 1/8 or 1/16.

Count-in

> To give you some time to get your hands on your instrument you can set a count-in of one or two bars. The count-in can be played only once (when starting the playback) or every time the loop starts from the start.

2.5 Mixer

The mixer lets you control:

- the level and mute state of song playback, metronome and note synthesizer.
- the balance of song playback and other sounds.

It can be accessed by clicking on the arrow below the fader in the top portion of the right sidebar. The fader controls the balance of song playback and other sounds and is always visible.

2.6 Project sidebar

Click on the ⬚ to open the project side bar. The project side bar gives you general information about the current song, let's you toggle the display of chords and let's you edit bookmarks and parts.

2.7 Editing parts, beat grid and chords

Sometimes the automatic detection of song parts, beat grid and chords doesn't produce the desired result. In that case you can correct them manually. This can be done in the project sidebar. Click on the ⬚ icon to open the project sidebar.

Project sidebar

2.7.1 Parts

In the project sidebar select the *Parts* tab. To rename a part, double-click on a part in the list and enter the new name. New parts can be created by setting the loop bounds to represent the part to be created and then clicking *Create new part*.

Edit parts

Note that parts can't be explicitly deleted. You can remove a part by selecting the part to be removed and the part before it and then clicking *Create new part*. This creates a new part that replaces the two selected parts, effectively removing the second part.

> *The automatically detected parts are named A, B, C, etc. If a part is named A2, this means it is similar to part A, i.e. it is the second occurrence of a similar song section.*

2.7.2 Song key and beat grid

In the project sidebar click on *Edit Key & Time*. This switches the sidebar to the edit page that lets you correct the detected song key and the beat grid.

> *The beat grid is defined by the time signature, the position of the downbeats and the tempo.*

Key   Set the song key by selecting the root pitch and the key type (major or minor).
Time
    Set the time signature numerator and denominator.
Downbeat
    Sometimes the time signature and the tempo are detected correctly, but the downbeat (the start of a bar) is off by a few beats. You can shift the downbeat by clicking on the left and right arrows in the edit page of the project sidebar.
Tempo
    The tempo can't be set directly. See below.

Sometimes the song tempo isn't detected correctly. You can correct it by performing the following steps:

1. Make sure that the time signature is set correctly.
2. Set the loop so that it contains a full bar with some space before and after it.
3. Click on *Edit Beat Grid* to enter the edit mode.
4. Click and drag inside the loop view to select exactly one bar.

Edit Key & Time

5. Press play to hear the bar looped to make sure you set the bar boundaries correctly.
6. Click and drag again until the selected loop contains exactly one bar.
7. Click on the ✓ icon above the selected loop to confirm.

The beat grid will now be recalculated based on the bar you just selected. You can always cancel the editing process by clicking on *Edit Beat Grid* again.

You can also reset the key and the beat grid to their initial state. To do this, click on *Reset Key & Time* in the edit page of the project sidebar.

2.7.3 Chords

The automatically detected chords are shown in the top portion of the loop view (the chord bar).

The chords shown in deCoda are purely informational. They don't change how the song is played back but are merely an annotation. If they are not relevant to you, you can hide them by setting the Show chords *toggle in the* project sidebar *to* Off.

Move a chord
    Long-press a chord and drag it left or right to the desired position.
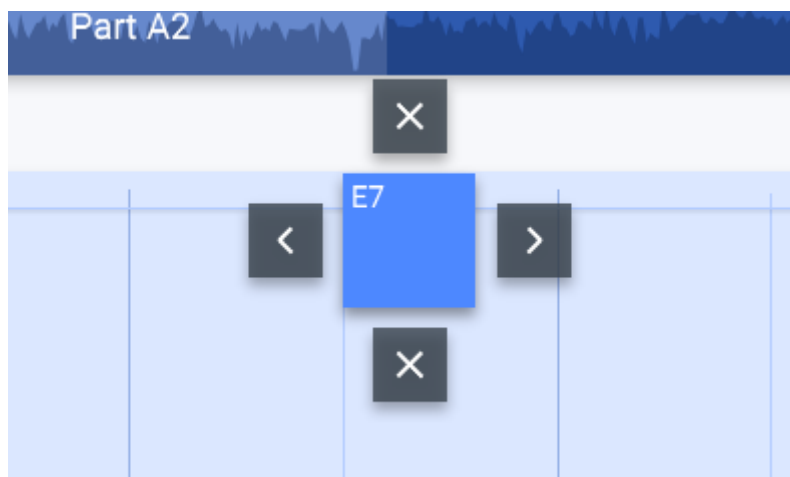
Moving or removing chords

Remove a chord
    Long-press a chord and drag it up or down until a red cross is shown.
Add a chord
    Long-press or right-click on the chord bar where no other chord is shown. Select the root pitch and the chord type in the resulting popup menu and click *Create*.
Edit a chord
    Tap or right-click a chord. Select the root pitch and the chord type in the resulting popup menu and click *OK*.

2.7.3.1 Edit multiple chords at once

You can apply a change to other similar chords i.e. chords with the same root pitch and chord type.
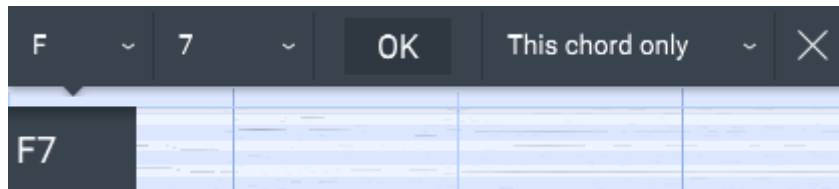
Editing multiple chords at once can come in handy if deCoda erroneously detects e.g. A major in multiple places where you would actually expect A minor.

To do this, begin with the same steps as editing a single chord. Before clicking *OK*, select from the combo box right to the *OK* button:

This chord only
> Don't change other chords.

All in loop
> Change all similar chords that are visible in the loop.

All in part
> Change all similar chords in the part the selected chord belongs to.

All in same parts
> Change all similar chords in the part the selected chord belongs to and all similar parts.

Everywhere
> Change all similar chords in whole song.

2.8 Bookmarks

Bookmarks are useful to mark a section you want to quickly find sometime later. They can be created for the currently selected loop area by simply clicking the ⭑ button in the bottom bar.

All bookmarks are displayed as ⭑ icons in the expanded project overview. You can recall a bookmark by clicking on the icon.

If there is more than one bookmark starting at the same time position, all bookmarks at this time position are represented by a single ⭑ icon. You can recall those bookmarks by clicking on the icon multiple times.
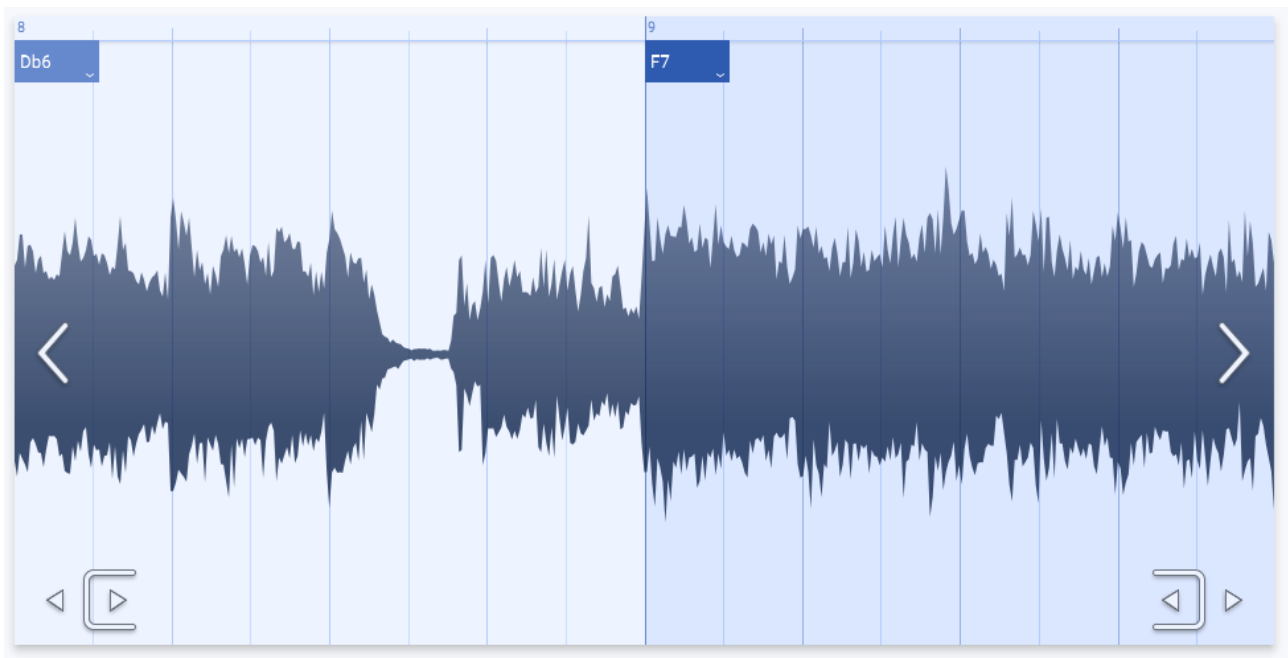

Bookmarks in project overview

Bookmarks can be renamed in the project sidebars *Bookmarks* tab by double-clicking the bookmark list entry and entering the new name.

To delete a bookmark, simply select it and press the ⭑ button again.

2.9 Waveform view

Waveform view

The waveform view simply shows the waveform of the audio file. The position of e.g. kick and snare drum hits is especially well visible in this view. This can be helpful when to identify the beat positions while editing the beat grid to give you a clue of where exactly a bar might begin.

The waveform view can be enabled by clicking on the ⁕ icon on the right sidebar.
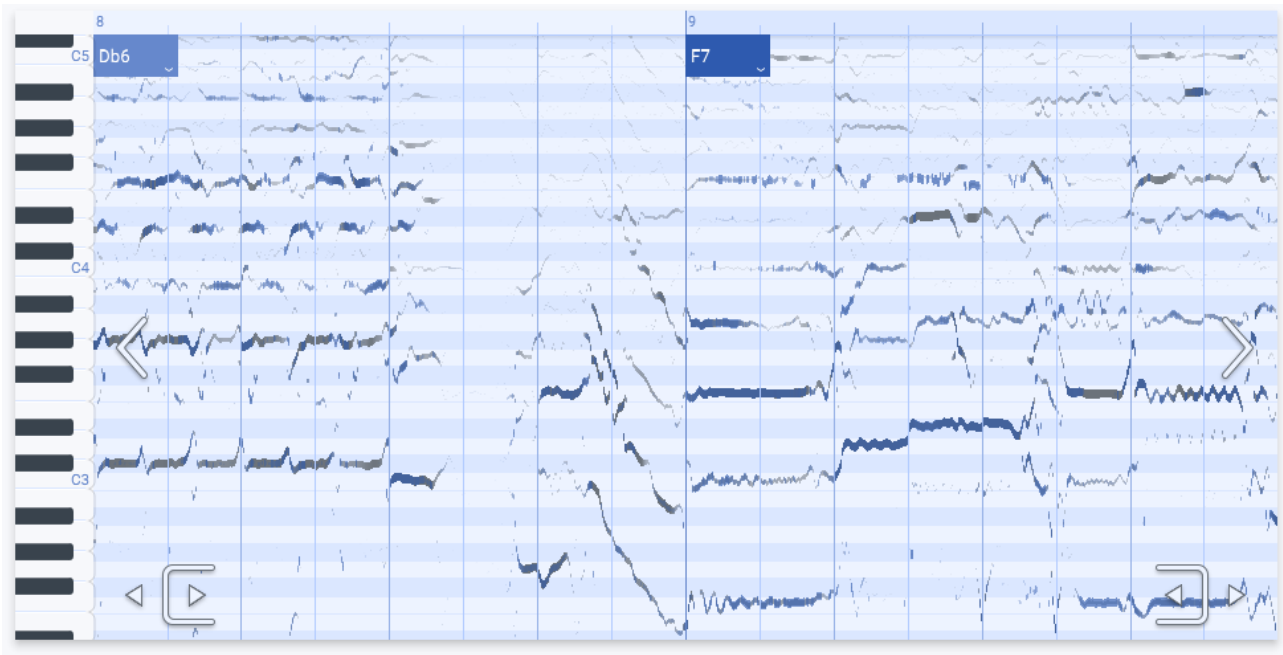

2.10 Piano roll view

The piano roll view shows the pitch content of the audio file drawn on a piano roll-like display. On the left there is shown a piano keyboard. Each horizontal row represents a piano key, i.e. a semitone pitch.

The piano view can be enabled by clicking on the ▤ icon on the right sidebar.

You can drag the loop view up and down to shift the range of notes displayed. Dragging the piano keyboard also allows for shifting the range, but additionally you can drag it left and right to zoom out and in. This behavior is also available when dragging the loop view while pressing the *Ctrl/Cmd* key.

2.10.1 Interpreting the display

Technically this view is a spectrogram that indicates the volume level of each frequency over time. The sound of instrument playing a note consists of multiple frequencies being heard at once. Each frequency will be represented by a continuous horizontal line. The lowest line corresponds to the fundamental frequency. It defines the pitch of the note. All other lines correspond to harmonic frequencies, also referred to as overtones.

Piano roll view

A vocal will not result in straight horizontal lines most of the times. This is because a vocalist will – naturally or intentionally – have a great deal of variability in pitch, e.g. when singing a vibrato or a slide to the next note. Unlike a vocal, a piano will result in straight lines because its physical construction doesn't allow for anything other than one fixed pitch per key.

If you set the loop to 8 bars or less, deCoda will try to figure out which of the horizontal lines may be fundamental frequencies of a vocal or an instrument. It will display those lines in blue. This can help you to identify the instrument you're looking for more easily.

2.10.2 Note editing

While deCoda isn't yet able to automatically generate sheet music for the loaded song, it provides you with tools that make it easy to figure out for yourself which notes are played. In the piano roll view you can place notes on the grid in a very similar way as in many other music software tools like e.g. digital audio workstations. Later on you can export the notes as MIDI file.

To enable the note editing mode, switch to the piano roll view and click on the ✎ icon on the right sidebar.

Add a note
> Long-press on the loop view at the position where you want to start the note. Then drag to the right to the position where you want to end it.
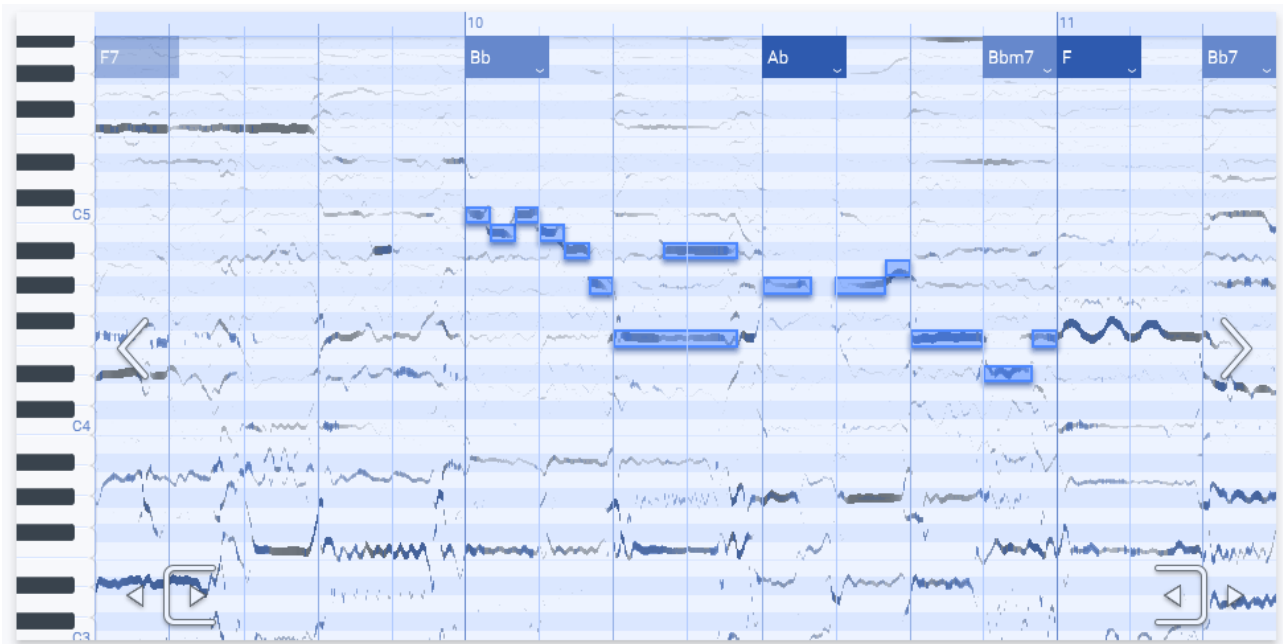
Move a note
> Simply drag it to the desired position.

Change the note length
> Drag the right end of the note to the desired end position.

Remove a note
> Simply click on it.

Piano roll with edited notes

While you edit notes, you will hear a "frozen" version of the song audio at the current mouse position. You will also hear the note you're currently editing. This gives you some feedback whether the note is matching what is really going on in the song at that moment.

The start and end positions of a note will always snap to a grid. The spacing of this grid can be set on the toolbar at the bottom of the loop view. You can set it to note lengths between 1/2 and 1/32. Additionally the grid can be set to triplets.

2.11 Focus

Figuring out what notes are sung or played by a particular instrument often is quite difficult when many other instruments are playing at the same time. To make it easier, you can enable the focus function.

The focus is a representation of what you hear while playing back the loaded song. It displays glowing circles on a plane. The vertical position correspond to a frequency that is audible at the moment. The horizontal position of the circles correspond to where you hear it in the stereo panorama. You can select an area in the plane by dragging over it. What you hear will then be filtered so that everything outside the selected area will sound quieter.

> You can think of the focus as a magnifier glass that lets you "zoom in" on what happens in a specific area in the sound field. It allows you to focus on e.g. a fast guitar solo panned half-right in a crowded mix.

To enable the focus, click on the ⊡ icon on the bottom bar. If you click on the icon again, the selection is inverted, i.e. what happens in the selected area is damped down. Clicking the icon once again disables the focus.

While the focus is enabled – normally or inverted – you can collapse the focus pane by clicking on the ⟩ icon on the top left corner of the focus pane.
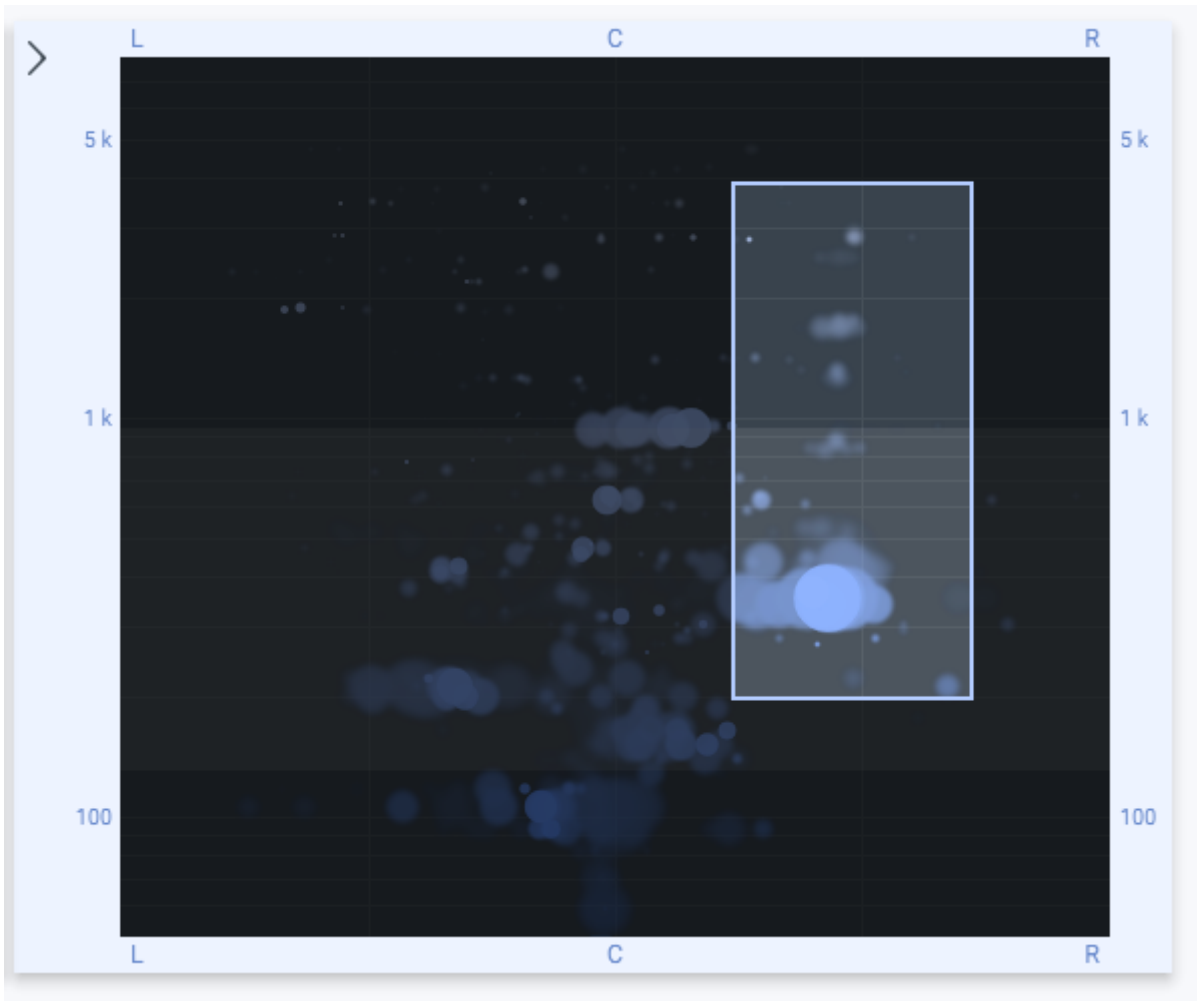
Focus view

There are a few things to note on the interplay between the focus and the piano roll view. If you set the loop to 4 bars or less, some frequency lines in the piano roll will be displayed in blue as described in the section Interpreting the display. In this case the focus selection will be applied to what you see in the piano roll view. This is done because the blue lines representing the potential pitches will be more accurate when there's less "distraction" by other sounds. To help you make the connection between what is displayed in the piano roll and what is selected in the focus, you'll see a light gray box in the focus window. It represents the range of notes visible in the piano roll view, but mapped to their corresponding frequencies.

2.12 Export

After you've done some work on your deCoda project, you may want to export it. deCoda offers several ways to do this.

Export the whole project
> Writes the whole project into a single file. It includes the audio file (if enabled in the settings) and all annotations like parts, chords, beat grid and notes. The exported project can be imported again in the same way as loading an audio file.

Export the loop as audio file
> Saves the currently selected loop as WAV file. It is exported exactly as you hear it when playing it back, i.e. including changed tempo and key and including the focus selection.

Export notes as MIDI file
> Saves the notes you added in the piano roll view as MIDI file. You can choose to include the whole song or only the currently selected loop in the resulting file.

The export options can be accessed by clicking the ⋮ icon in the top right corner of the deCoda window.

2.13 Help

deCoda features a help system that can quickly give you information about most user interface elements. There's also an interactive tutorial as well as a list of tutorial videos.

2.13.1 Tooltip help

The user interface help can be accessed in two stages: tooltip mode and help mode.

To enter tooltip mode, click on the ? icon on the top bar. This opens the help popup menu next to the icon. Now, if you hover over various user interface elements, a tooltip popup will be displayed that summarize what they do and how to use them. The user interface remains clickable as usual in this mode.

To enter help mode, click on *More Help & Tutorials* in the help popup menu. This places an overlay on the whole deCoda window. It contains a number of blue boxes which you can hover to display a tooltip just as in the tooltip mode described above. You can switch between an *Overview* and a *Detailed Help* view in the help popup menu.

In any of the two stages you can click on the ? icon again to return to the normal screen.

2.13.2 Tutorials

The tutorials can be accessed via the help mode as described above. In help mode, click on *Show Tutorials* in the top middle of the screen. This opens the welcome screen. There you'll have access to a list of tutorial videos.

Below the video list there is a *First steps* button. Clicking on it starts an interactive tutorial that guides you through the basic usage of deCoda.

3 Project history
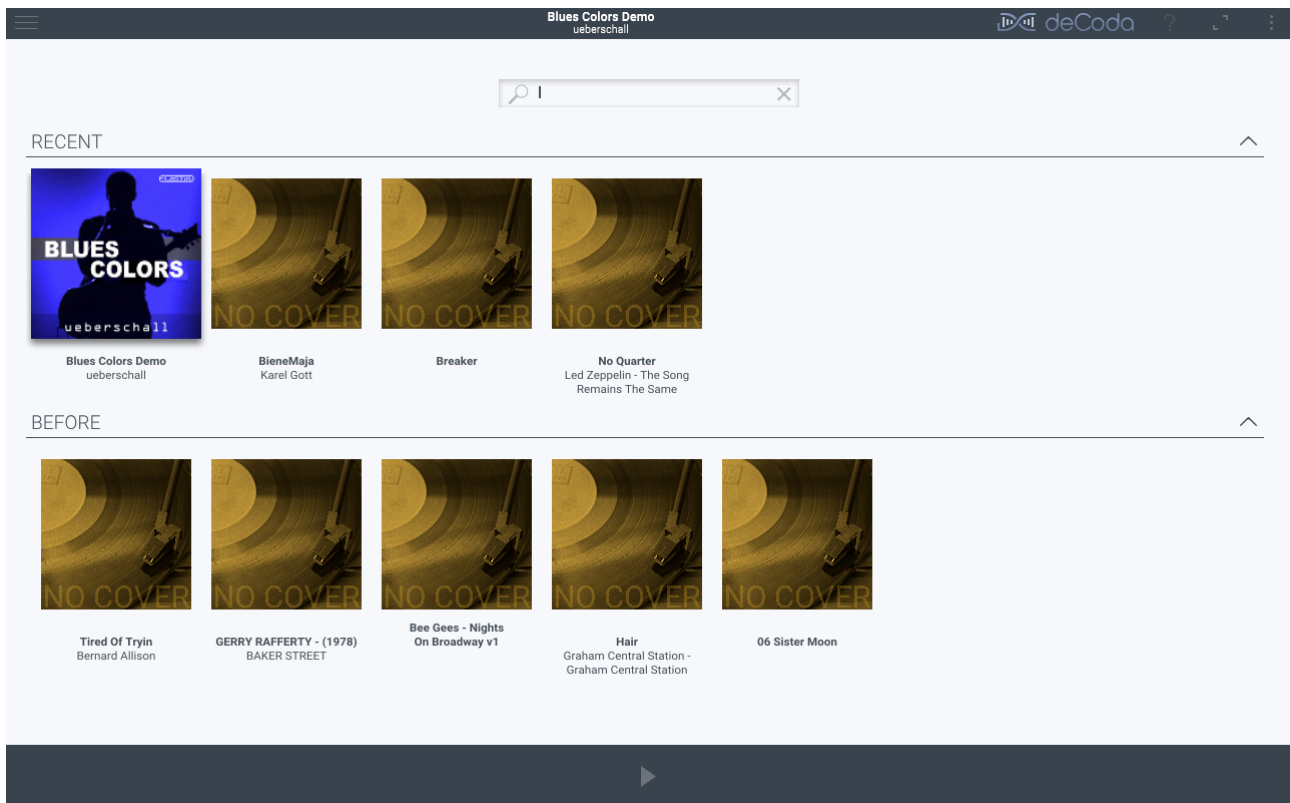
Project history

The project history is a list of all projects you opened before. The projects are ordered and grouped by the time they were last opened.

At the top of the project history screen there is a search field that allows you to search for a specific project. You can enter a song title, artist name or album here.

A click on a project selects it. You can pre-listen the selected project by clicking on the ▶ icon. You can also remove the selected project from the library by clicking on the ⋮ icon in the top right corner of the deCoda window and clicking *Remove*.

A double-click on a project opens it and switches to the Current project view.

4 Settings
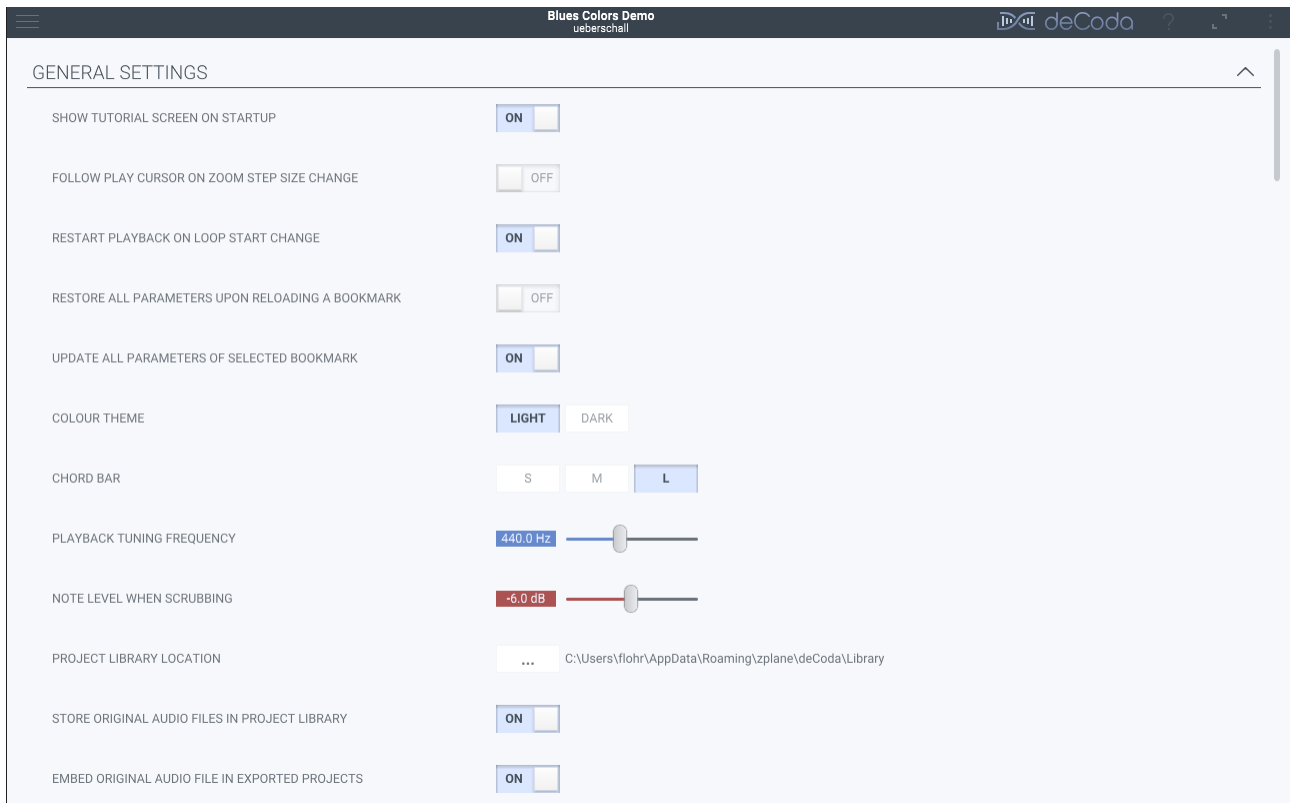
Settings screen

The settings screen is grouped in collapsible sections.

4.1 General

Show tutorial screen on startup
> If you disabled the startup screen, enable this to bring it back.

Follow play cursor on zoom step size change
> If disabled, applying the step size to the loop length only modifies the loop end. If enabled and playing back, the loop will be shifted after applying the step size to ensure it contains the play cursor.

Restart playback on loop start change
> Set the play cursor to the loop start if the loop start changes.

Restore all parameters upon reloading a bookmark
> If disabled, only restores the loop bounds. If enabled, restores all settings listed under *Update all parameters of selected bookmark*.

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Update all parameters of selected bookmark

> When the current loop matches a bookmark, store all changes to the following settings in the bookmark:

- Tempo and key
- Focus settings
- Metronome settings
- Step size
- Waveform or piano roll view
- Visibility of chords

Colour theme

> Choose between a light and dark user interface theme. deCoda must be restarted after changing this.

Chord bar

> Changes the appearance of the chords during playback.

- S: No change. Display as marker labels.
- M: Display chords in a scrolling banner-like style better suited for for playing along.
- L: Same as M, but bigger.

Playback tuning frequency

> deCoda automatically detects the tuning frequency the song was recorded in and changes the pitch of the whole song to match the tuning frequency set here. This prevents an out-of-tune sound while playing along if e.g. your guitar is tuned just a tad higher or lower than the song.

Note level when scrubbing

> Attenuate the note synthesizer when scrubbing (long-press on the loop view to freeze playback at that position). This might help to better hear the original notes in relation to the synthesized ones while editing notes.

Project library location

> Change the location on disk where deCoda stores your projects. If you change it, you have two options:

- Change: Just point deCoda to the new folder. If it is empty, create a new empty library there. If it contains an already existing library, use it.
- Change & move: Move the current library to the new folder.

Store original audio files in project library

> Copy the original audio file into the library when you initially load a new song into deCoda.

Embed original audio file in exported projects

> When exporting a project, include the original audio file in the resulting project file. It is **your own responsibility** to make sure you don't infringe a copyright!

Default app to open MIDI files

> Set the app to open MIDI files. This is used when you export a MIDI file by selecting "MIDI - Loop & Open" from the export menu.

4.2 Audio

Select which audio device and output channel deCoda should use. Click on *Test* to play a test tone to check if your setup works correctly.

If you experience crackling noise or audio drop-outs during playback, try increasing the buffer size.

4.3 Keyboard shortcuts

Here all available commands are listed that can be triggered using a keyboard shortcut.

Add a shortcut
> Click *Add* right to the command you want to add a keyboard shortcut to. Then press the desired key or key combination and click *OK*.

Change a shortcut
> Click on the shortcut you want to change and select *Change* in the resulting popup menu. Then press the desired key or key combination and click *OK*.

Remove a shortcut
> Click on the shortcut you want to remove and select *Remove* in the resulting popup menu.

5 Demo restrictions

The demo version of deCoda enables you to try out almost all the features. There are just two restrictions:

- deCoda closes after 2 minutes of audio playback.
- Export options are disabled.