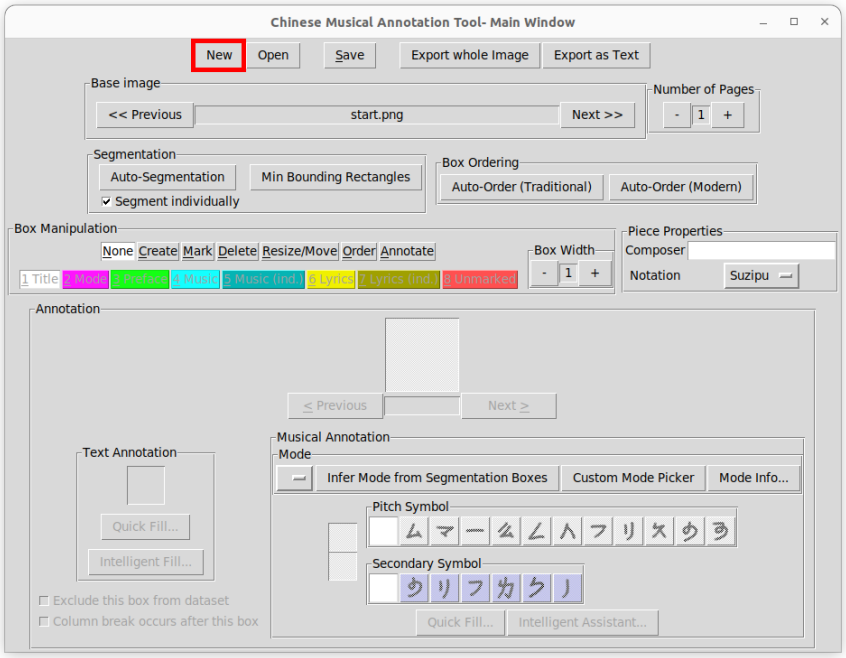
APPENDIX C

# Tutorial: *Chinese Musical Notation Annotation Tool*

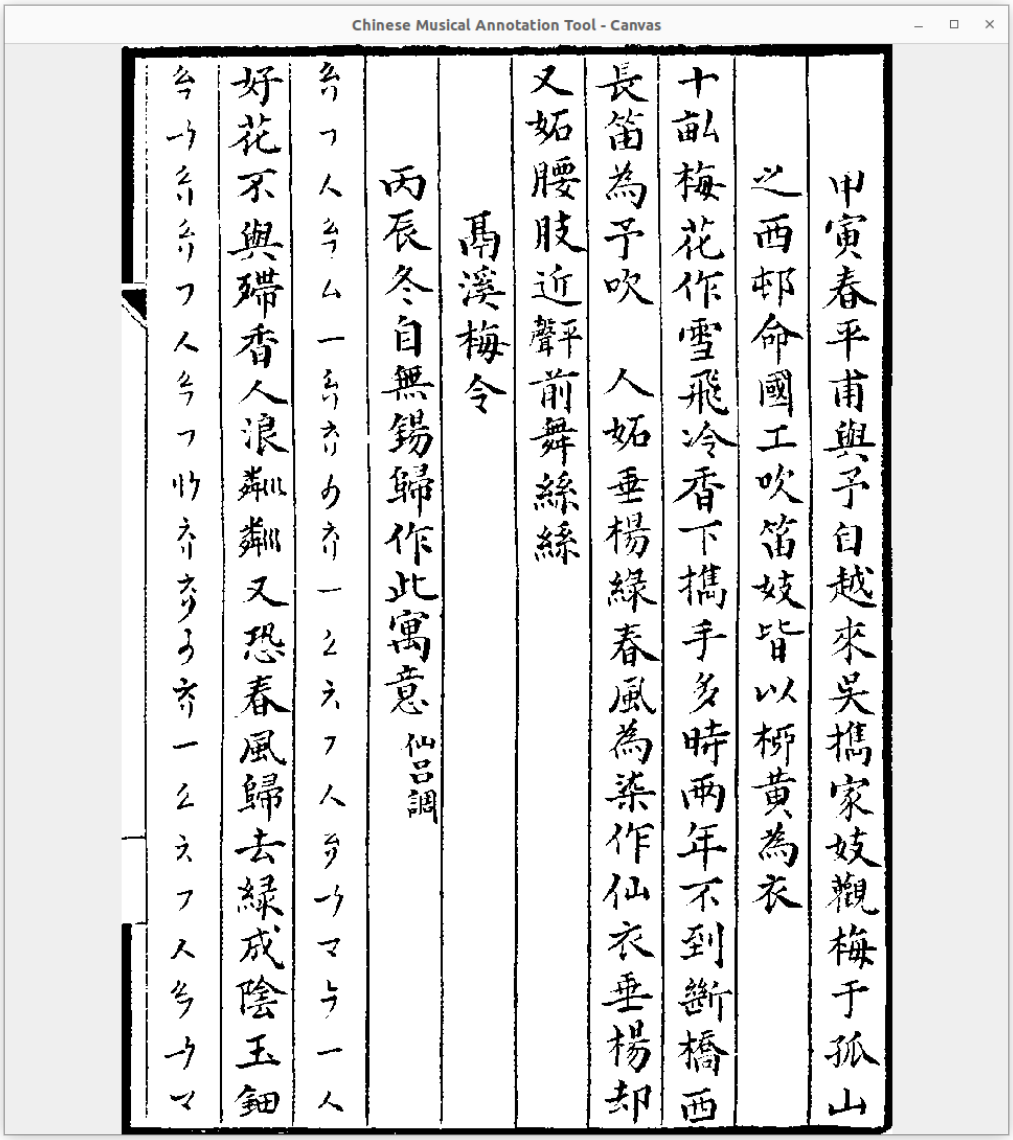
A short practical introduction to the *Chinese Musical Notation Annotation Tool* is given here. We will annotate *Geximeiling* from the Shanghai MS.

## Choosing the Correct Paths

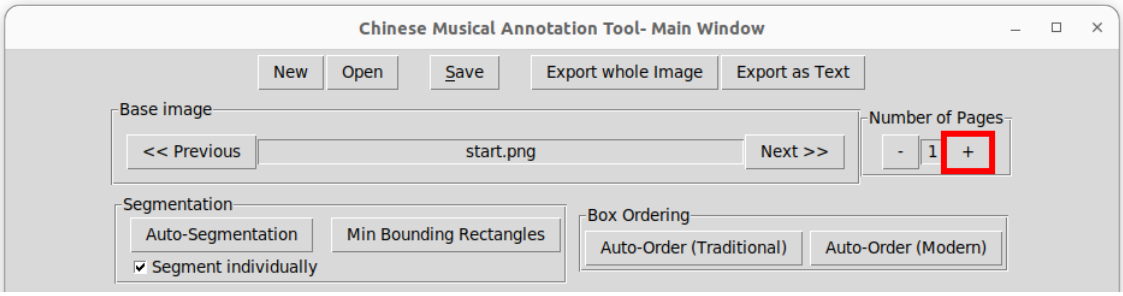



After starting the application, three windows open: The `Main Window`, the `Canvas` and the `Notation Display`. In the `Main Window`, using the button `New` we select the path `./gui-tools/tutorial/suzipu`, where the images we want to annotate are contained.

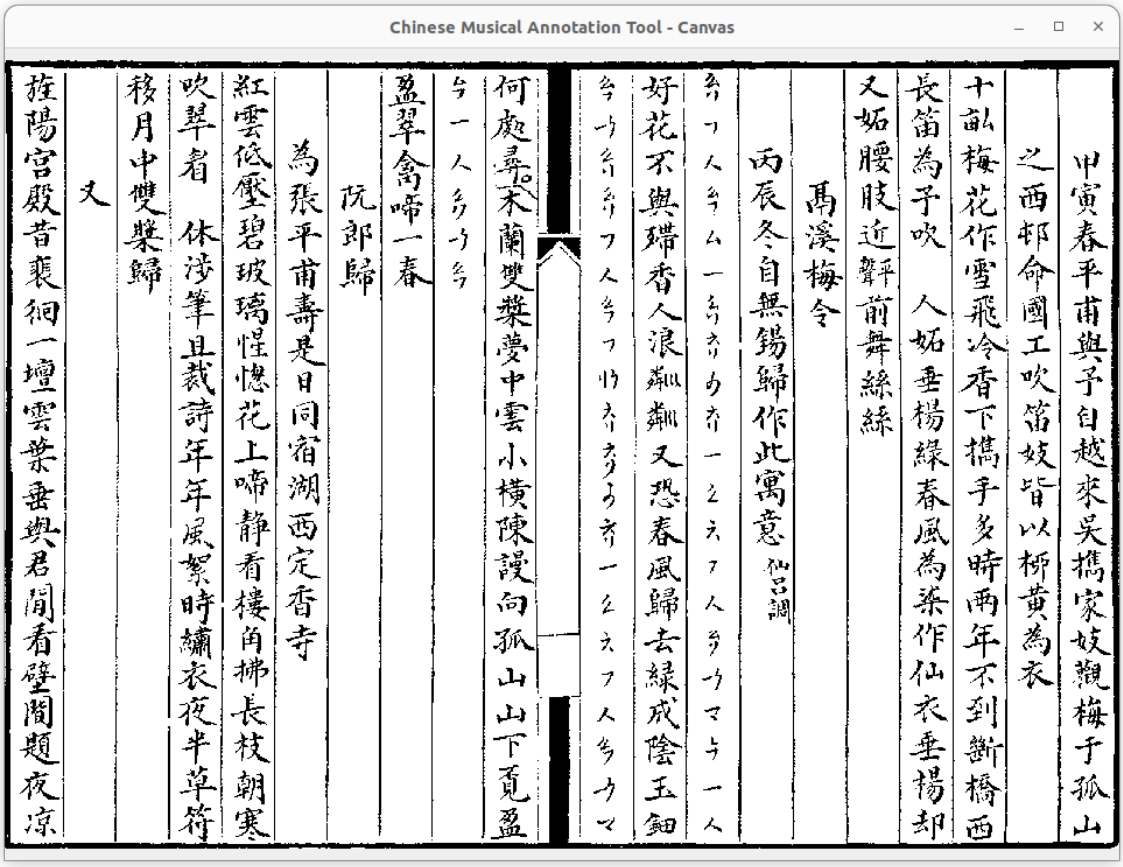
## Creating the Segmentation Boxes



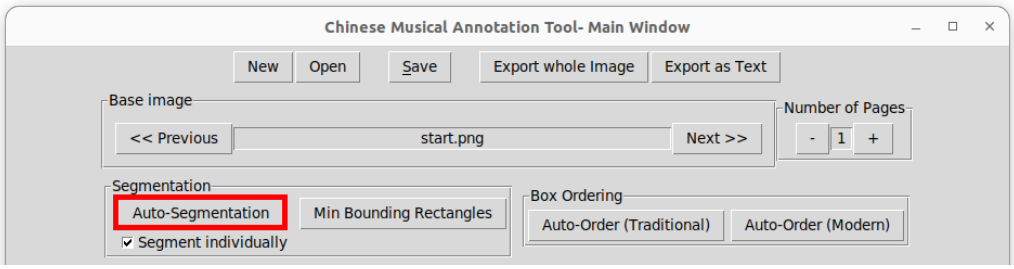

Let's have a look at the `Canvas` window. We see that on this page, only the last two columns belong to *Geximeiling* and a part of the piece is cut off at the end.



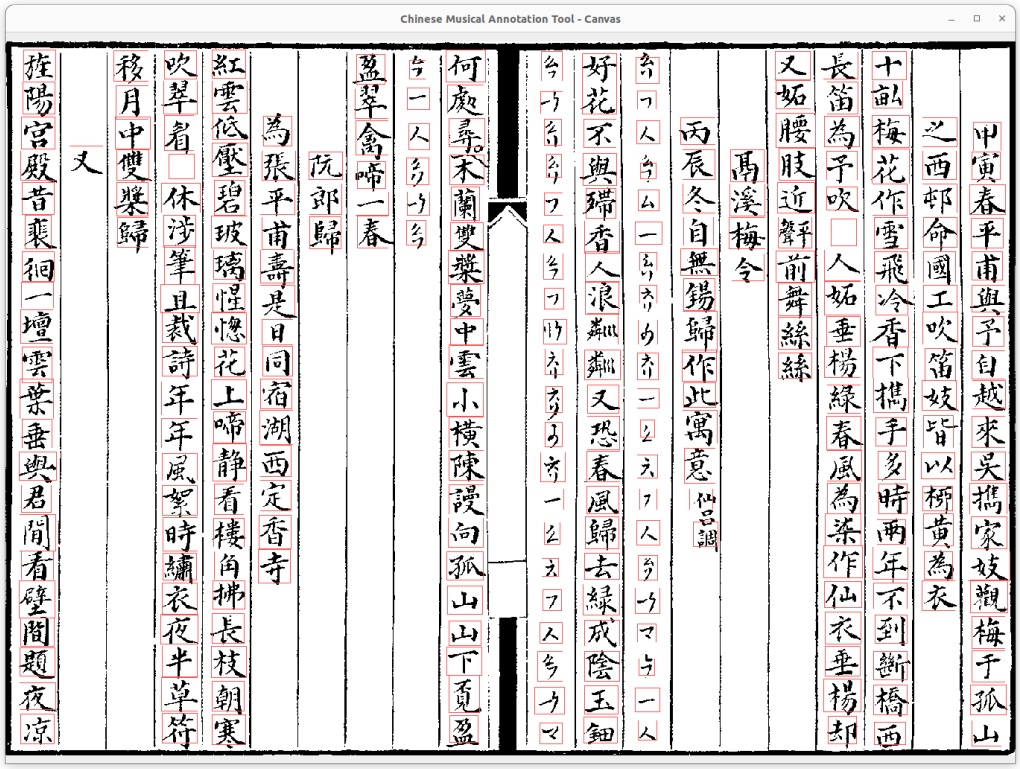

Therefore we need to add the second page, where the missing part of the piece is located, to our environment. Go back to the `Main Window`. In the upper part, using the + button marked in red, we set the number of pages to 2.



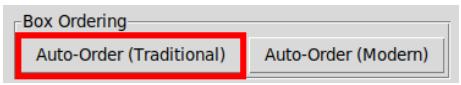

This caused the second page to appear in the `Canvas Window`. With the mouse wheel and the left mouse button, the image can be scaled and the displayed area can be moved.



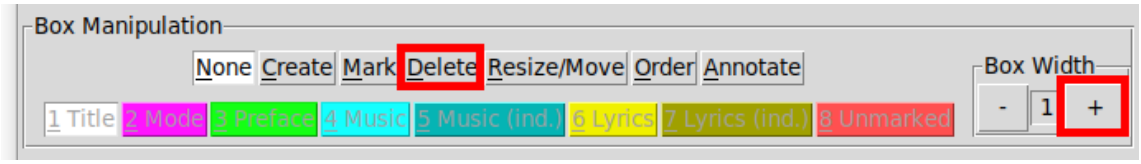

Using the button `Auto-Segmentation` in the `Main Window`, ...



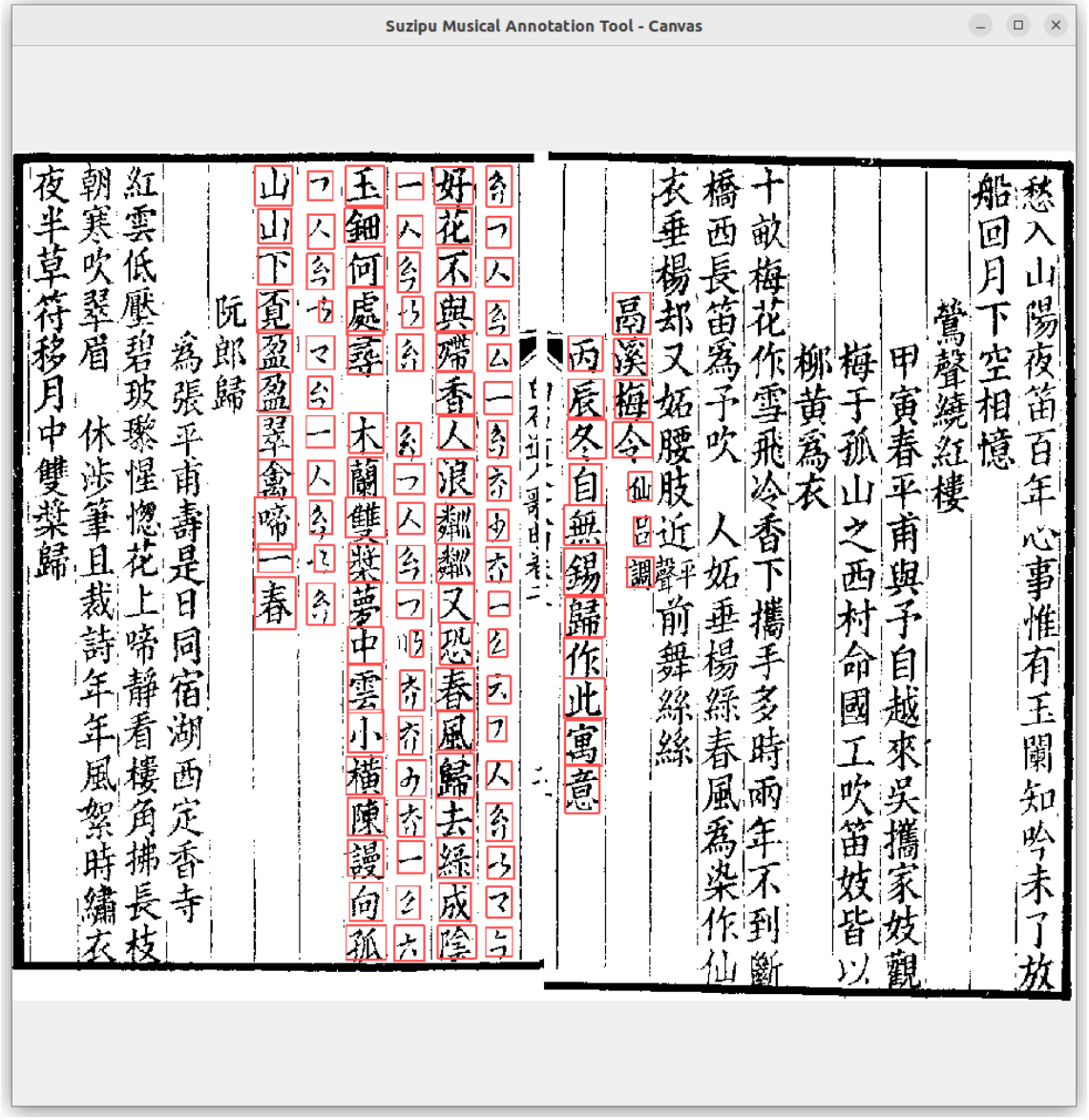

...the segmentation algorithm has created a preliminary segmentation of the piece.




When clicking on `Auto-Order (Traditional)`, the boxes are automatically ordered in traditional Chinese reading order. However, it can be seen that many boxes on the right and left do not belong to *Geximeiling*, and some boxes are drawn incorrectly.



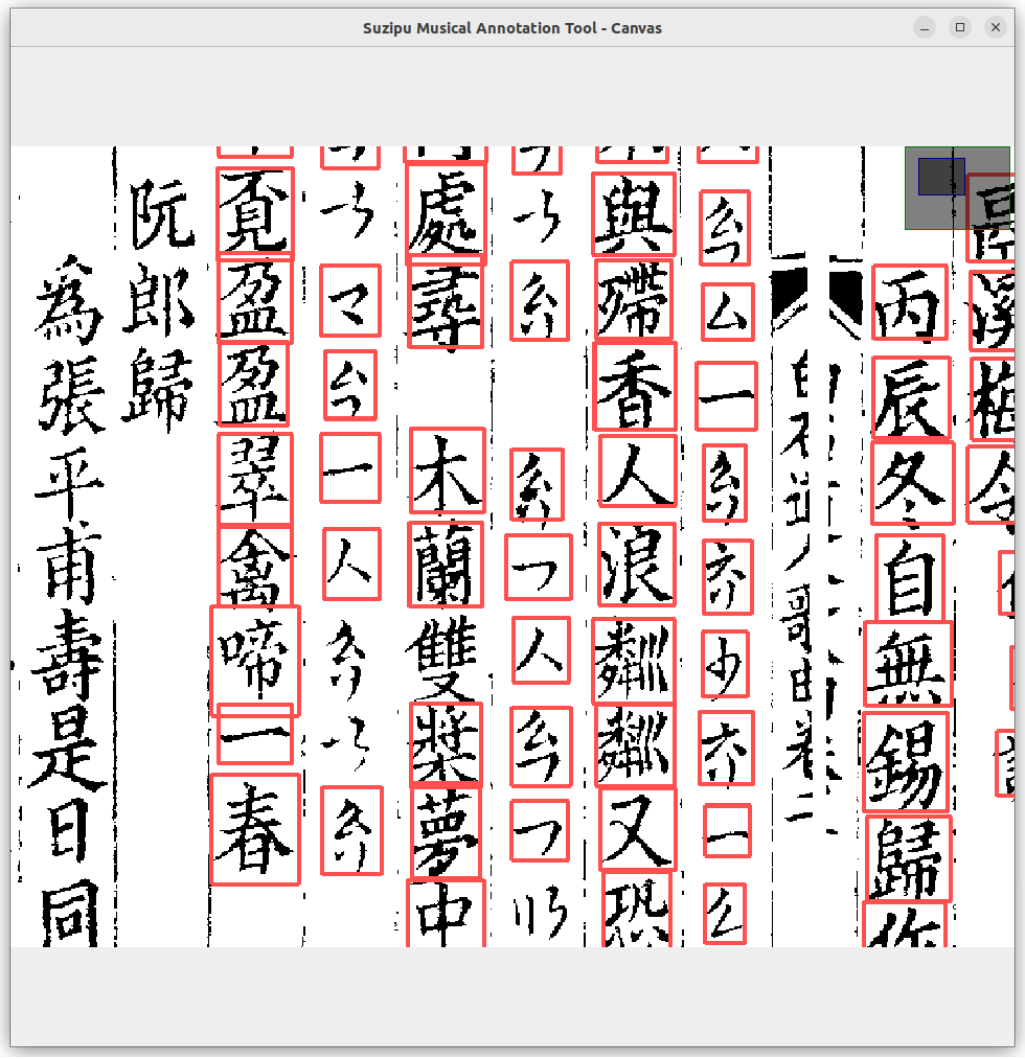

Therefore, select `Delete` (or press `Ctrl+D` on the keyboard) in the `Main Window`. For better visibility of the boxes, the box width can be increased with the button +.



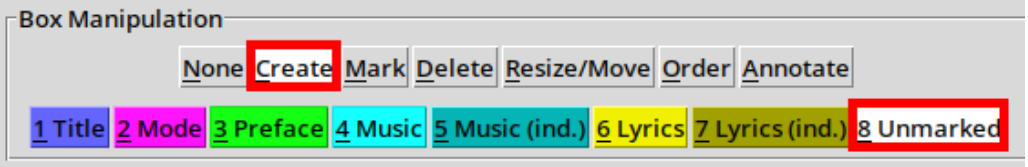
In the mode `Delete`, there are three modes by which boxes can be deleted:

1. A single box is deleted by hovering over it while clicking the right mouse button.
2. When the `Ctrl` key is pressed when you right click a box, all boxes after the box in the same column are deleted.
3. When the `Alt` key is pressed, you can draw a rectangle which will remove all boxes that intersect with the rectangle at the time the right mouse button is released.

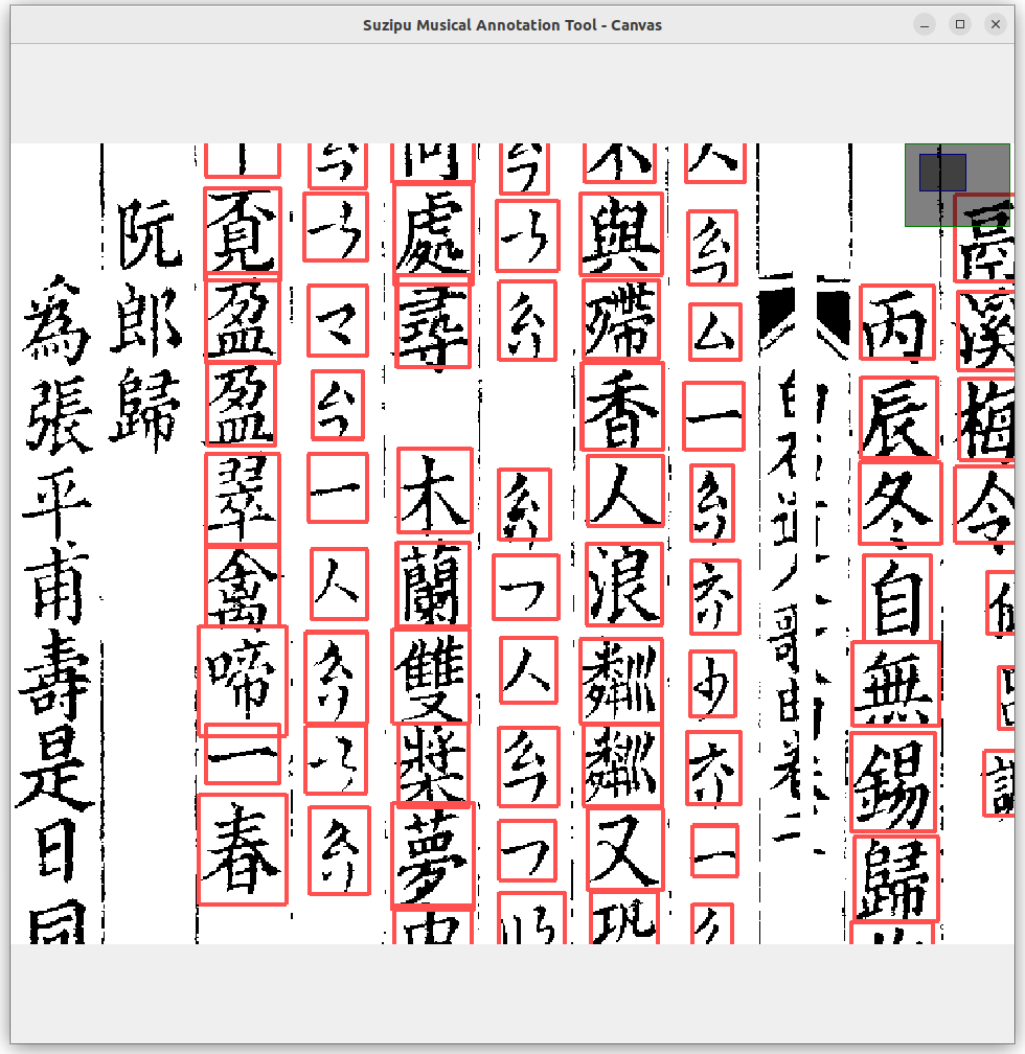
Using a method of your choice, delete all boxes not belonging to *Geximeiling*.




Secondly, check the remaining boxes whether they fit the characters well. If not, these are also deleted with the right mouse button. In the next step, we are going to redraw them manually.



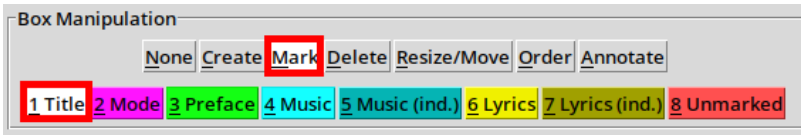

In the `Main Window`, choose the button `Create` and select the box type `8 Unmarked`.



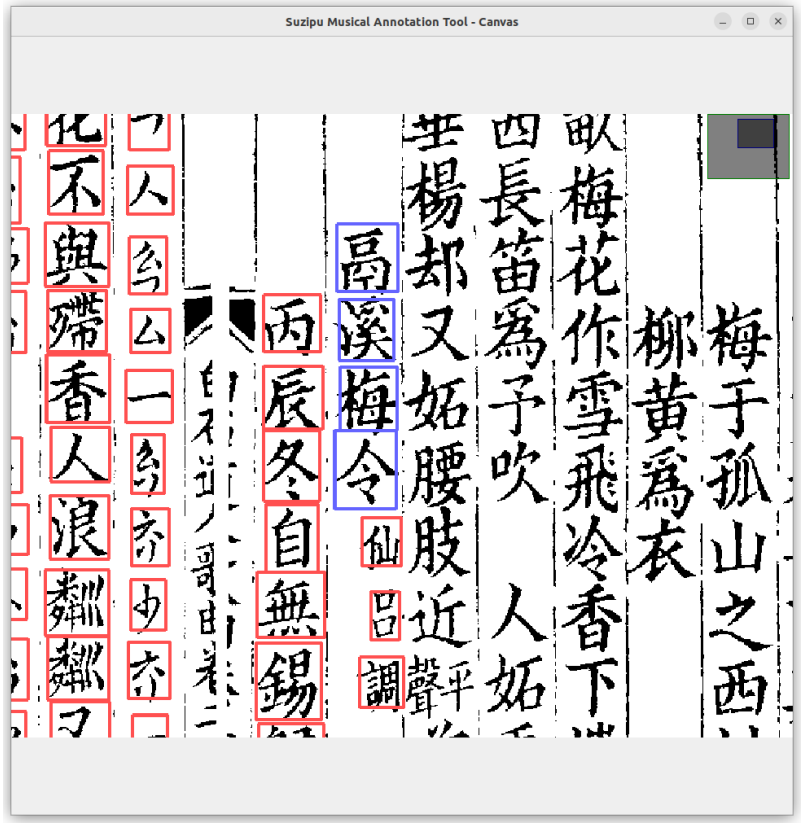

In the mode `Create`, create new boxes the following way: First, move the mouse cursor to the upper left corner of the place where the segmentation box should appear. Hold down the right mouse button and move it to the place where its lower right corner should be. When releasing the right mouse button, a new segmentation box appears.

Note that using the action `Resize/Move`, you can manually adjust the position of each box by right-clicking inside the segmentation box and dragging it around on the canvas, and change the borders of the box by right-clicking and dragging slightly outside each border. Using the action `Order`, you can manually change the ordering of selected boxes and confirm using the `Enter` key on the keyboard.

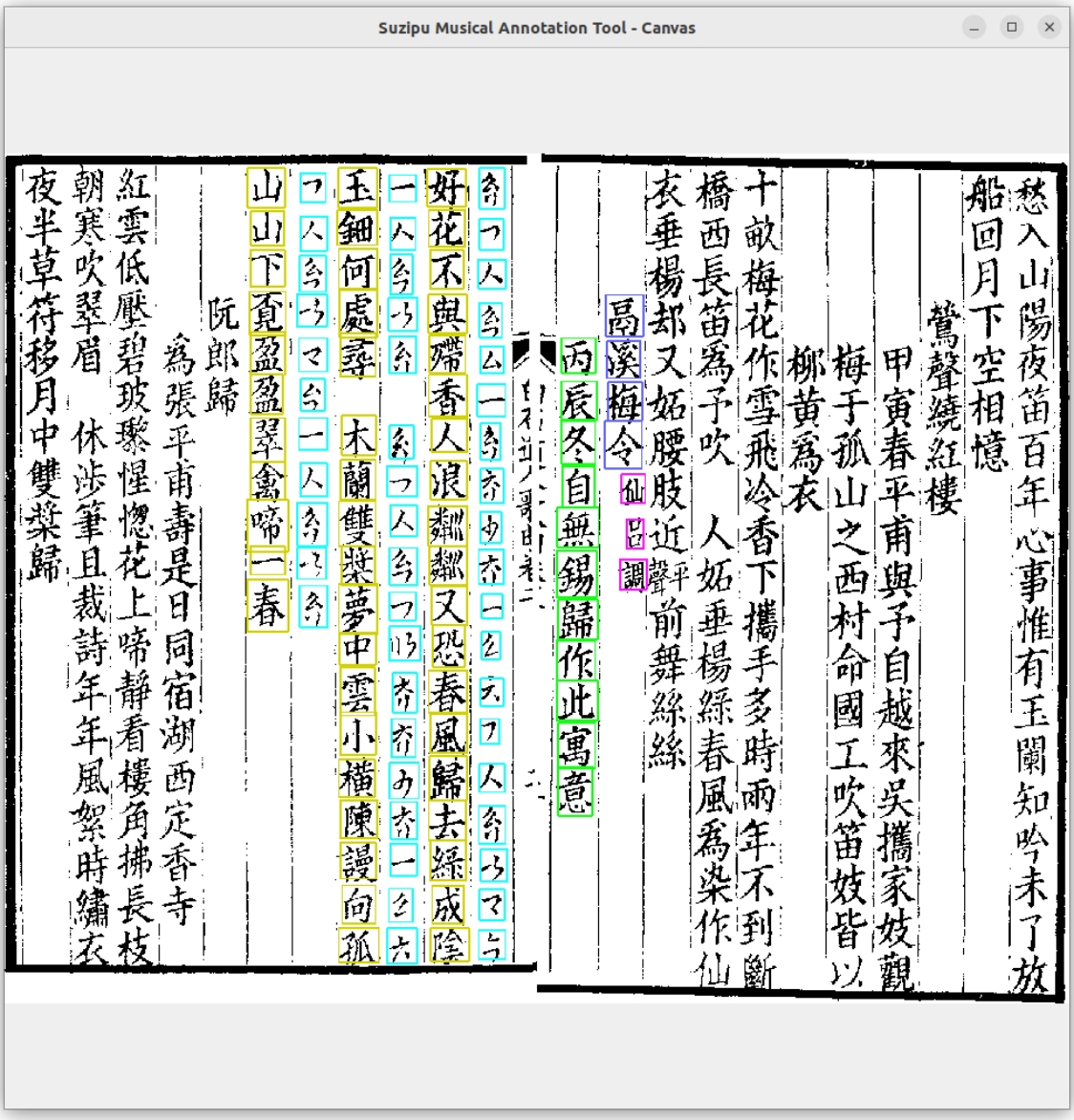
## Marking the Segmentation Boxes




In the `Main Window`, choose the button `Mark`, and choose the type label button `1 Title`.

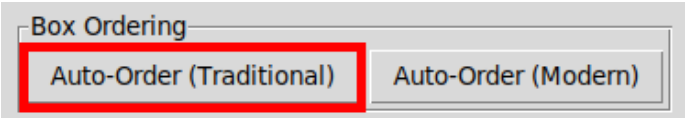



In the mode `Mark`, we can change the boxes' labels by hovering over them while the right mouse button is pressed. Since the type `Title` is selected, the marked boxes take on a blue color.

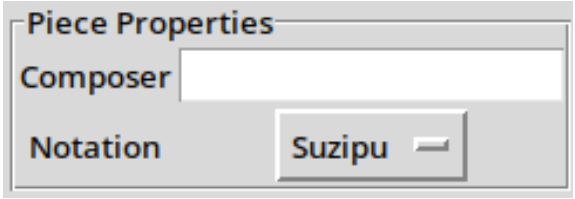



Repeating this with all the other type labels, every box in the piece is marked correctly. No boxes of type `Unmarked` should be present anymore.


In order to represent the blanks dividing the piece into two stanzas, create empty boxes around the spaces.

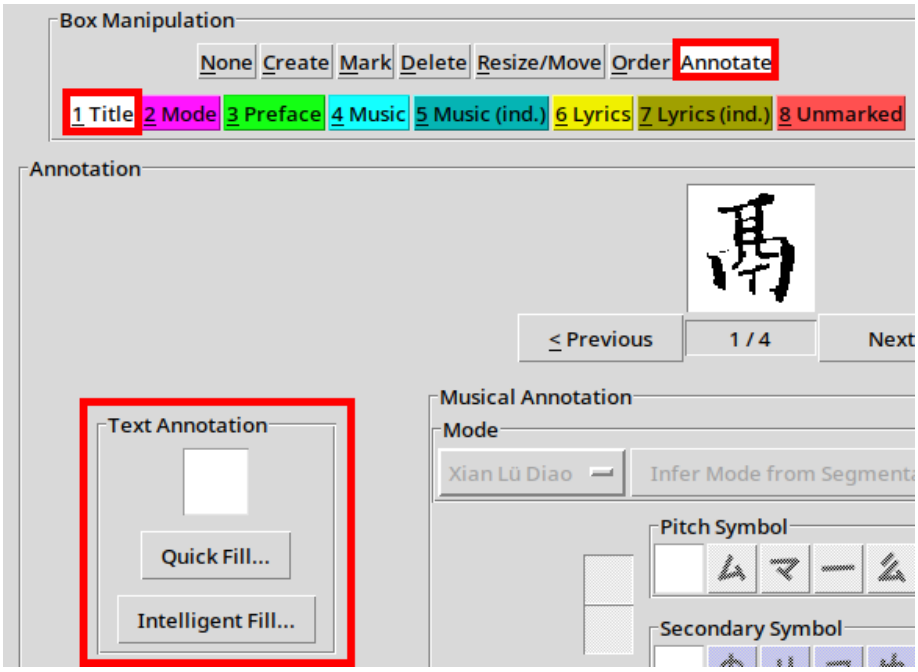



After deleting, creating or marking segmentation boxes, the correct reading order for the later annotation step has to be ensured. This is done using the button `Auto-Order (Traditional)`. If this is not done, the *Chinese Musical Notation Annotation Tool* will randomly jump between the boxes in the `Annotation` mode.




Now, fill the composer field with the string “姜夔”. By default, the piece’s notation is already set to *suzipu*.

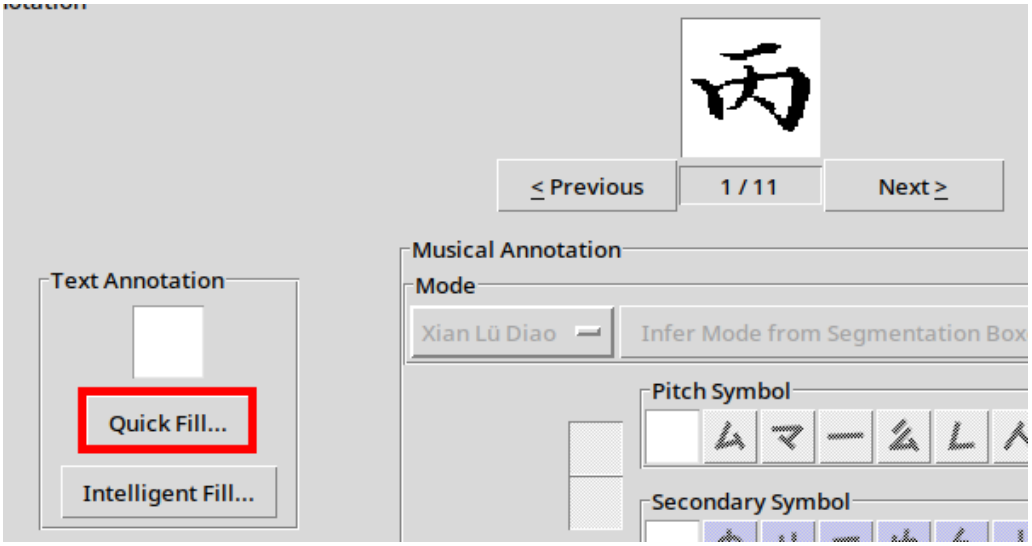
## Annotating Text



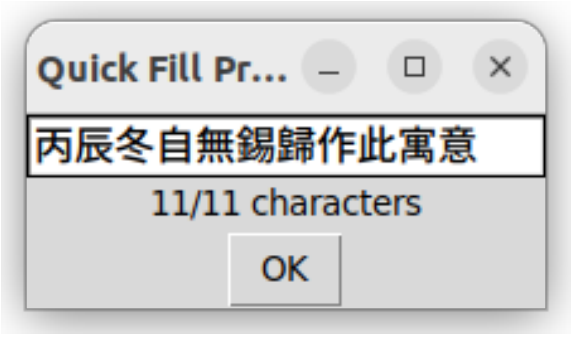

In the `Main Window`, choose the mode `Annotation`. Firstly, choose the type label button `Title`. The `Text Annotation` textbox is now ready to be filled with the correct character.


Fill in the character “鬲”.


Using the buttons `<< Previous` and `Next >>`, all four title characters are easily annotated. In addition, using the right click in the `Canvas` window, a box can be selected. The currently selected box is marked with a thicker border in the `Canvas Window`.

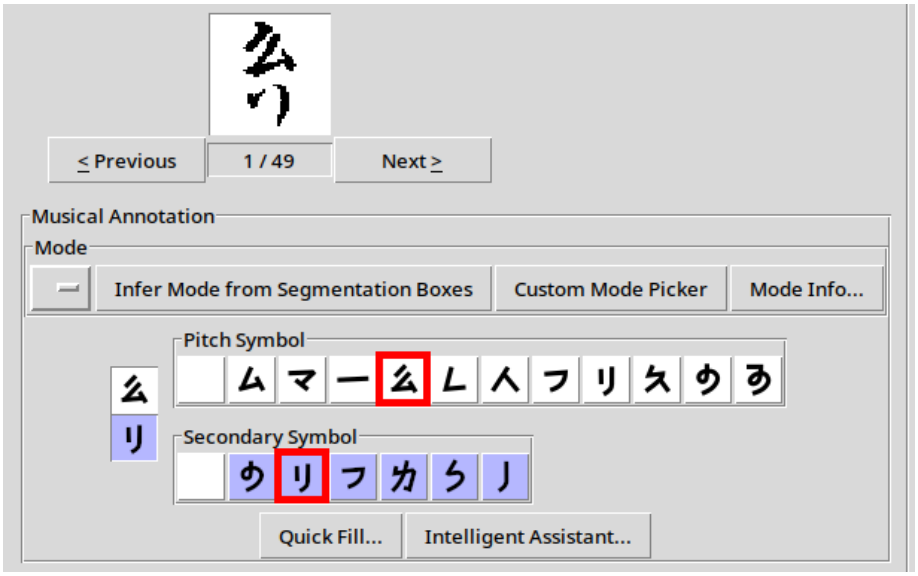



Annotating each box one after one is a tiresome process. Now, we annotate the preface by selecting the type `Preface`. Instead of annotating each of the 11 boxes manually, use the quick fill function that can be accessed by clicking the button `Quick Fill...`.

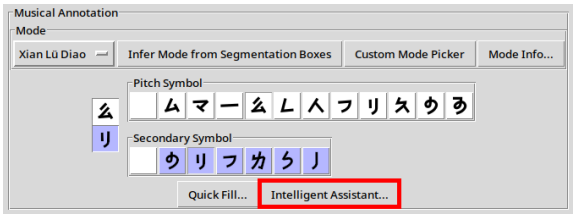



In the quick fill textbox, paste the string "丙辰冬自無錫歸作此寓意". Then, annotate the mode and lyrics.

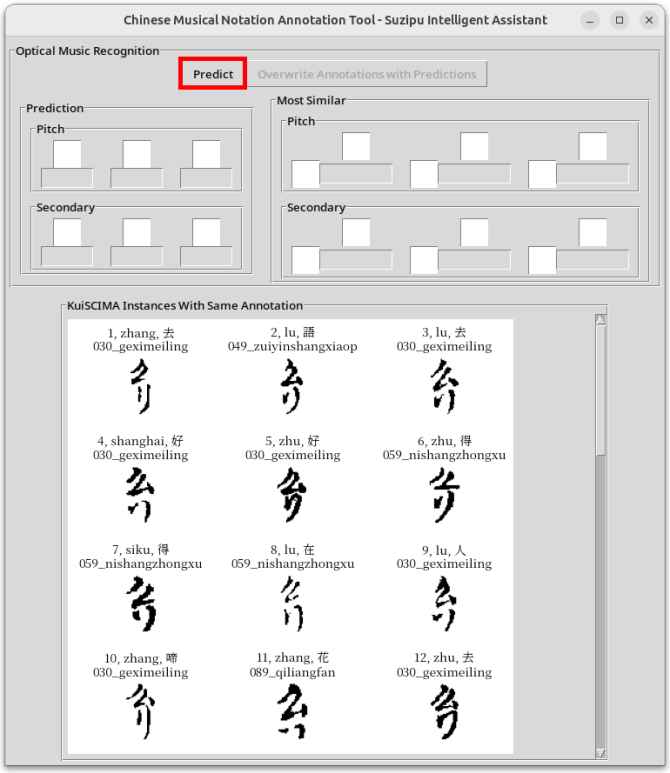
## Annotating *Suzipu*



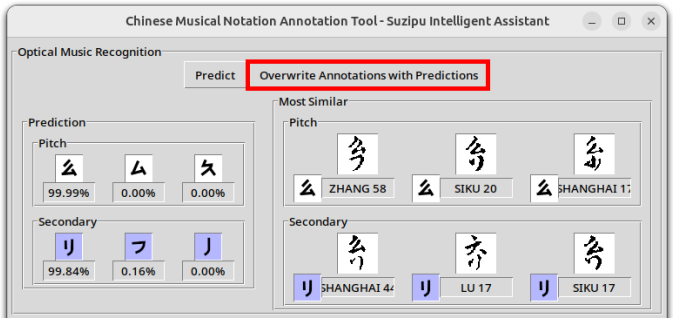

When the mode `Annotation` with type `Music` is selected, the notation-specific annotation widget is enabled. Similar to before, annotate each box by choosing the correct notational symbols. Here, the first *suzipu* character is already a pair-character notation, so the first and second symbols must be assigned accordingly.




Instead of manually annotating each *suzipu* character one after one, we can also use a computer-assisted approach using the `Intelligent Assistant...`.

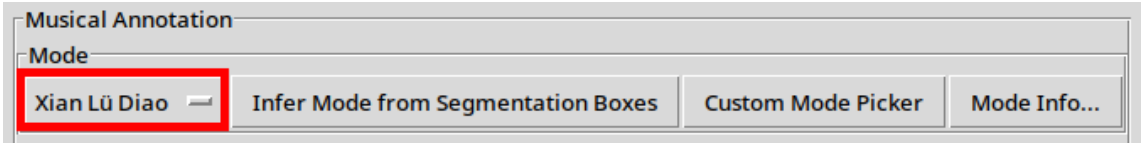



In the lower half of the window, we see other instances in the KuiSCIMA dataset with the same annotation as assigned to the currently selected character. Now, let's click on `Predict`.

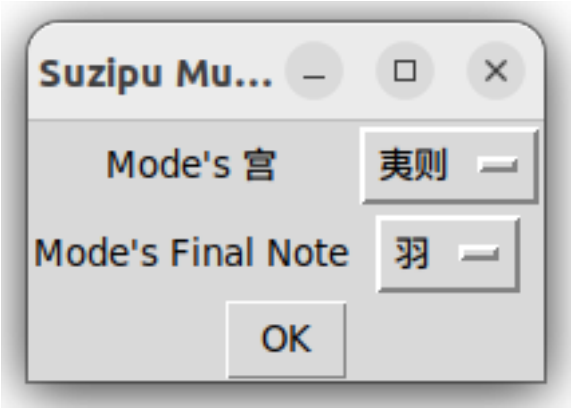



After some seconds, the model has finished predicting. On the right side, you see the most similar instances for each component in the KuiSCIMA dataset. On the left side, you see the classifier predictions for each pitch and secondary components with a confidence score below it. If this score is high, you can trust the prediction! To overwrite the annotations with the model predictions, click on `Overwrite Annotations with Predictions`.

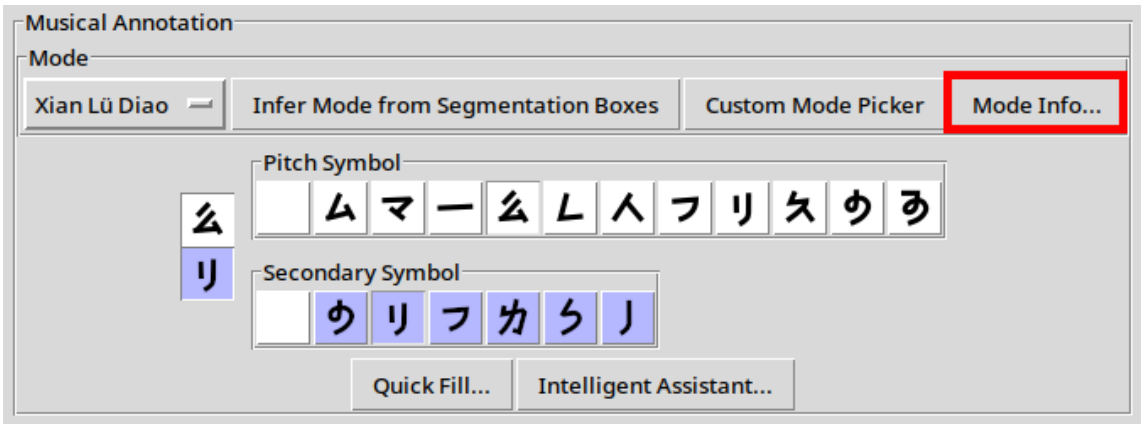
## Mode Information



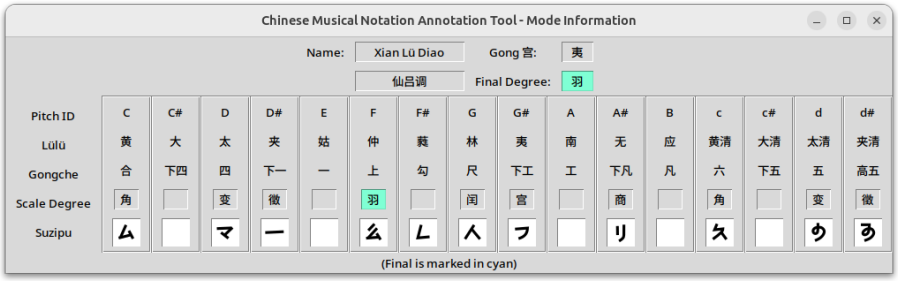

Do not forget to fill in the mode information. Select *Xian Lü Diao* from the drop-down menu. Alternatively, since we have already annotated the segmentation boxes containing the mode, we can click the button `Infer Mode from Segmentation Boxes`, or click on the `Custom Mode Picker` button to create a custom mode, ...




...where we have the possibility to choose from all 84 modes, instead of the 30 modes in the list, by choosing one out of twelve *lülü* corresponding to *Gong*, and one out of the 7 final degrees.

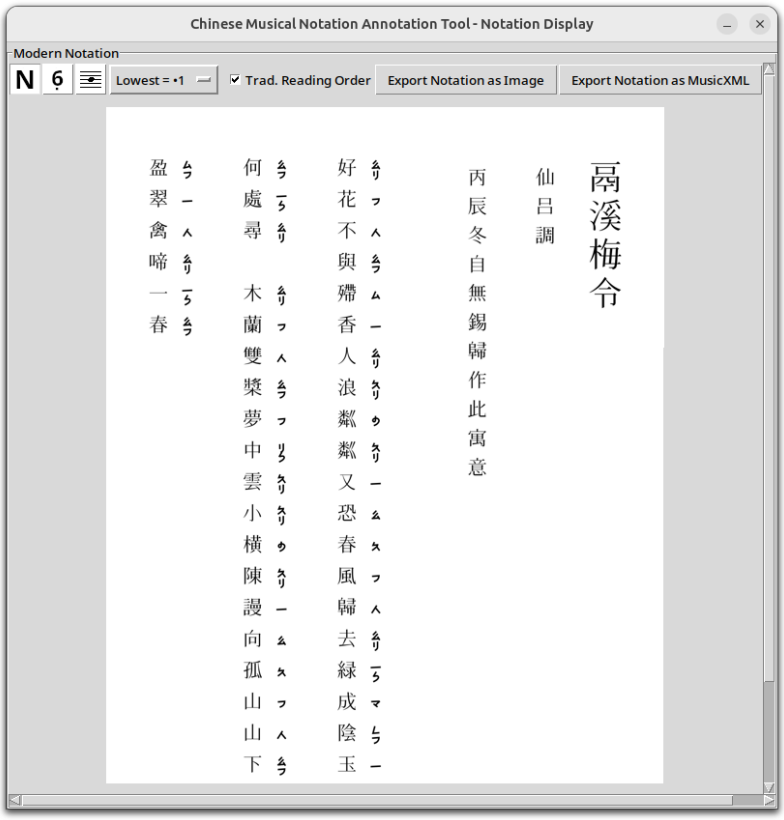



If you want to visualize the mode's properties, click on `Mode Info...`




...and you can see how pitch identifier, *lülüpu* and *gongchepu* notations, scale degree and *suzipu* symbols correspond to each other given the mode.

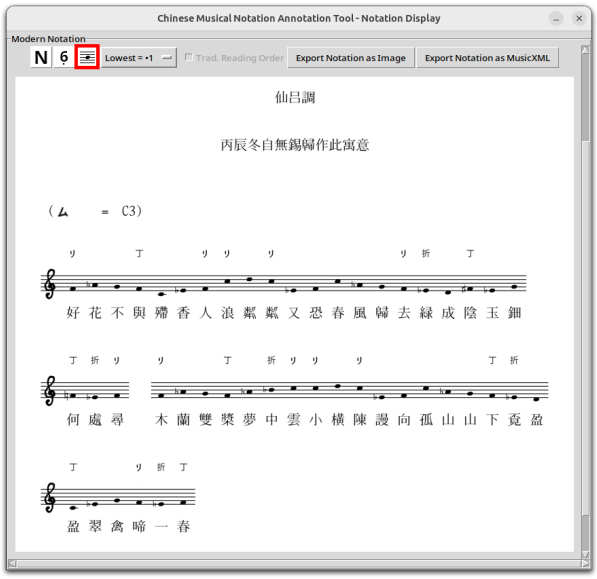
## Notation Display



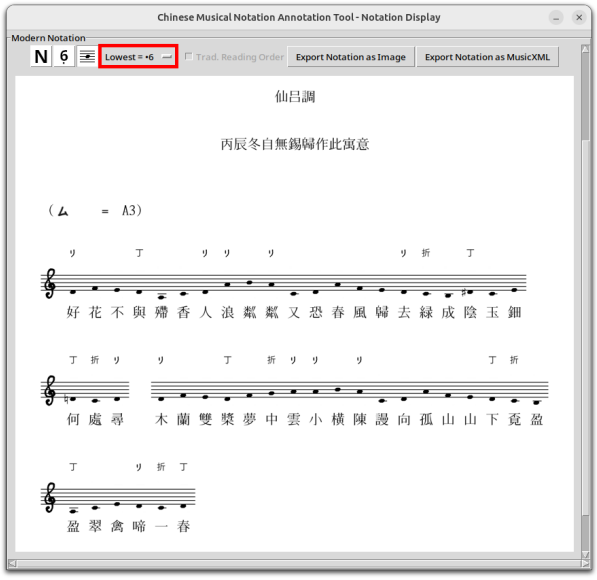

By default, the piece is displayed as an on-the-fly rendered score, where the structure and displayed notation follows the original score as closely as possible.


When disabling `Trad. Reading Order`, the modern reading order (i.e., row-wise from top to bottom) is enabled.


When clicking at the *jianpu* notation button, the pitch characters are transformed into modern *jianpu* notation, and *He* ㄙ is rendered as 1̣, by default. The secondary symbols are rendered above the notes with the first character of their name, except for *Dadun* 大顿, *Xiaozhu* 小住 and *Dazhu* 大住, which are rendered using their *suzipu* glyphs as ㄉ, ㄐ, ㄉ.




When clicking at the five-line notation button, the score is on-the-fly rendered to appear as five-line notation.

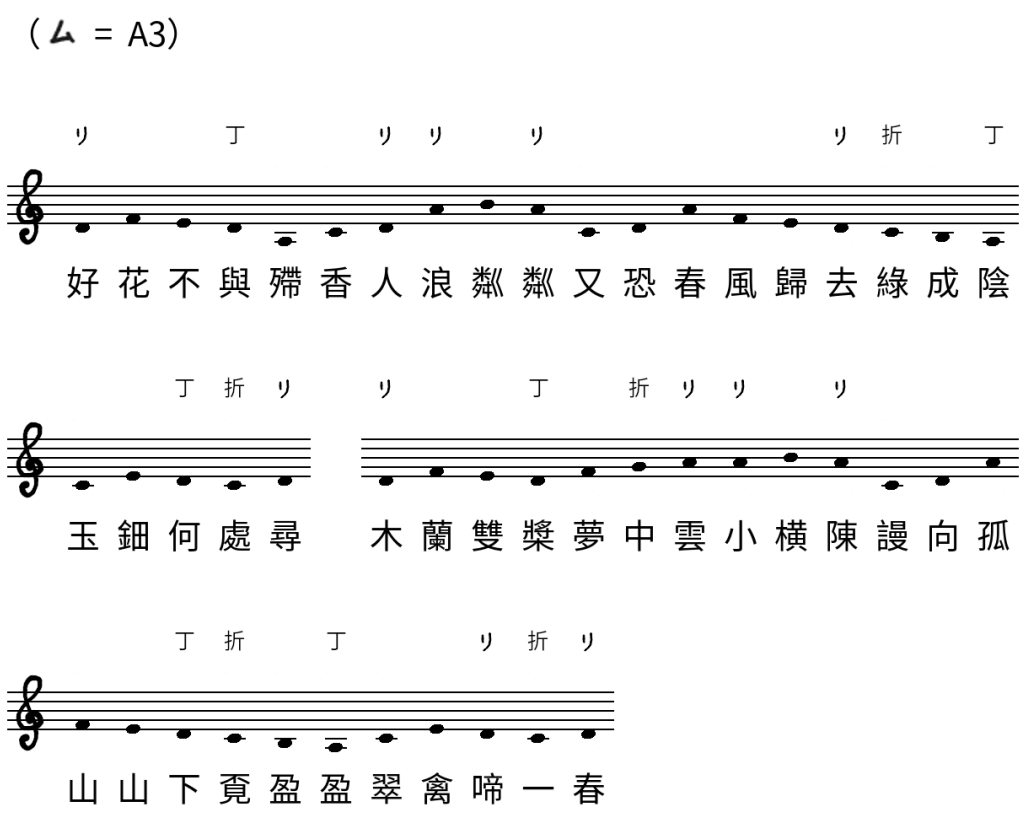



Using the dropdown menu marked in red, another transposition can be used, e.g., such that 𝅘𝅥 is rendered as $\dot{6}$. Using the button `Export Notation as Image`, ...

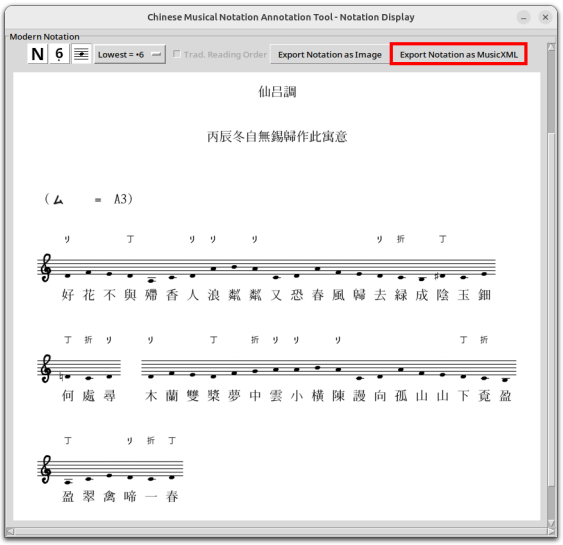
# 鬲溪每令

仙吕調（仙吕调）

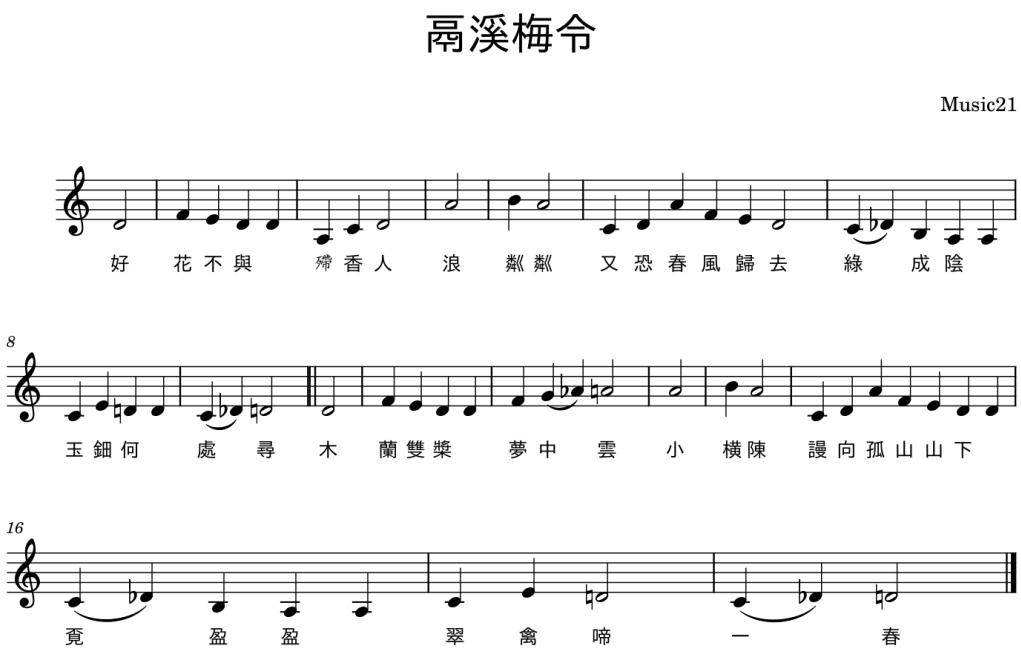
丙辰冬自無錫歸作此寓意



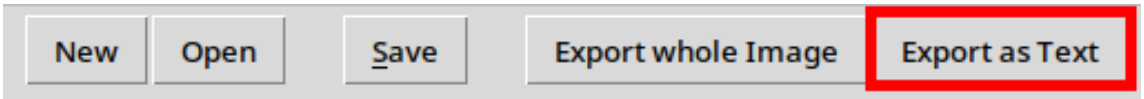

…the notation image is saved as a PNG file, including the title, the mode as stated in the mode segmentation boxes, in parentheses the mode as selected in the mode selection menu, and the preface.




With the button `Export Notation as MusicXML`, ...




...the transnotation into modern five-line notation is saved in MusicXML representation, and can then be processed by other software. The image file shown here was generated using MuseScore, a program which can be used to view or modify MusicXML files, and also allows for playback of the melody.




In the `Main Window`, after clicking on the button `Export as Text`, ...

```
Title: 高溪梅令

Mode: 仙呂調（仙吕调）

Preface: 丙辰冬自無錫歸作此寓意

Lyrics: 好花不與殢香人浪粼粼又恐春風歸去緑成陰玉鈿何處尋 木蘭雙槳夢中雲小橫陳謾向孤山山下頁盈盈翠禽啼一春

Music: [{"pitch": "SHANG", "secondary": "XIAO_ZHU"}, {"pitch": "GONG", "secondary": null},
{"pitch": null, "secondary": null}, {"pitch": "SHANG", "secondary": "DING_ZHU"}, {"pitch": "HE",
"secondary": null}, {"pitch": "YI", "secondary": null}, {"pitch": "SHANG", "secondary":
"XIAO_ZHU"}, {"pitch": "LIU", "secondary": "XIAO_ZHU"}, {"pitch": "WU", "secondary": null},
{"pitch": "LIU", "secondary": "XIAO_ZHU"}, {"pitch": "YI", "secondary": null}, {"pitch": "SHANG",
"secondary": null}, {"pitch": "LIU", "secondary": null}, {"pitch": "GONG", "secondary": null},
{"pitch": "CHE", "secondary": null}, {"pitch": "SHANG", "secondary": "XIAO_ZHU"}, {"pitch": "YI",
"secondary": "ZHE"}, {"pitch": "SI", "secondary": null}, {"pitch": "GOU", "secondary": "DING_ZHU"},
{"pitch": "YI", "secondary": null}, {"pitch": "CHE", "secondary": null}, {"pitch": "SHANG",
"secondary": "DING_ZHU"}, {"pitch": "YI", "secondary": "ZHE"}, {"pitch": "SHANG", "secondary":
"XIAO_ZHU"}, {"pitch": null, "secondary": null}, {"pitch": "SHANG", "secondary": "XIAO_ZHU"},
{"pitch": "GONG", "secondary": null}, {"pitch": "CHE", "secondary": null}, {"pitch": "SHANG",
"secondary": "DING_ZHU"}, {"pitch": "GONG", "secondary": null}, {"pitch": "FAN", "secondary":
"ZHE"}, {"pitch": "LIU", "secondary": "XIAO_ZHU"}, {"pitch": "LIU", "secondary": "XIAO_ZHU"},
{"pitch": "WU", "secondary": null}, {"pitch": "LIU", "secondary": "XIAO_ZHU"}, {"pitch": "YI",
"secondary": null}, {"pitch": "SHANG", "secondary": null}, {"pitch": "LIU", "secondary": null},
{"pitch": "GONG", "secondary": null}, {"pitch": "CHE", "secondary": null}, {"pitch": "SHANG",
"secondary": "DING_ZHU"}, {"pitch": "YI", "secondary": "ZHE"}, {"pitch": "SI", "secondary": null},
{"pitch": "HE", "secondary": "DING_ZHU"}, {"pitch": "YI", "secondary": null}, {"pitch": "CHE",
"secondary": null}, {"pitch": "SHANG", "secondary": "XIAO_ZHU"}, {"pitch": "YI", "secondary":
"ZHE"}, {"pitch": "SHANG", "secondary": "DING_ZHU"}]

```

...a textual representation of the piece is saved as a TXT file, again including the title, the mode as given in the original piece, the user-selected mode in parentheses, the lyrics, and the musical notation.