Musical Painting Software

1. Description

The musical painting software allows people to draw and generate the corresponding music based on the built-in rules.

2. Interactive Elements

A prototype of the musical painting software is shown in the figure below.

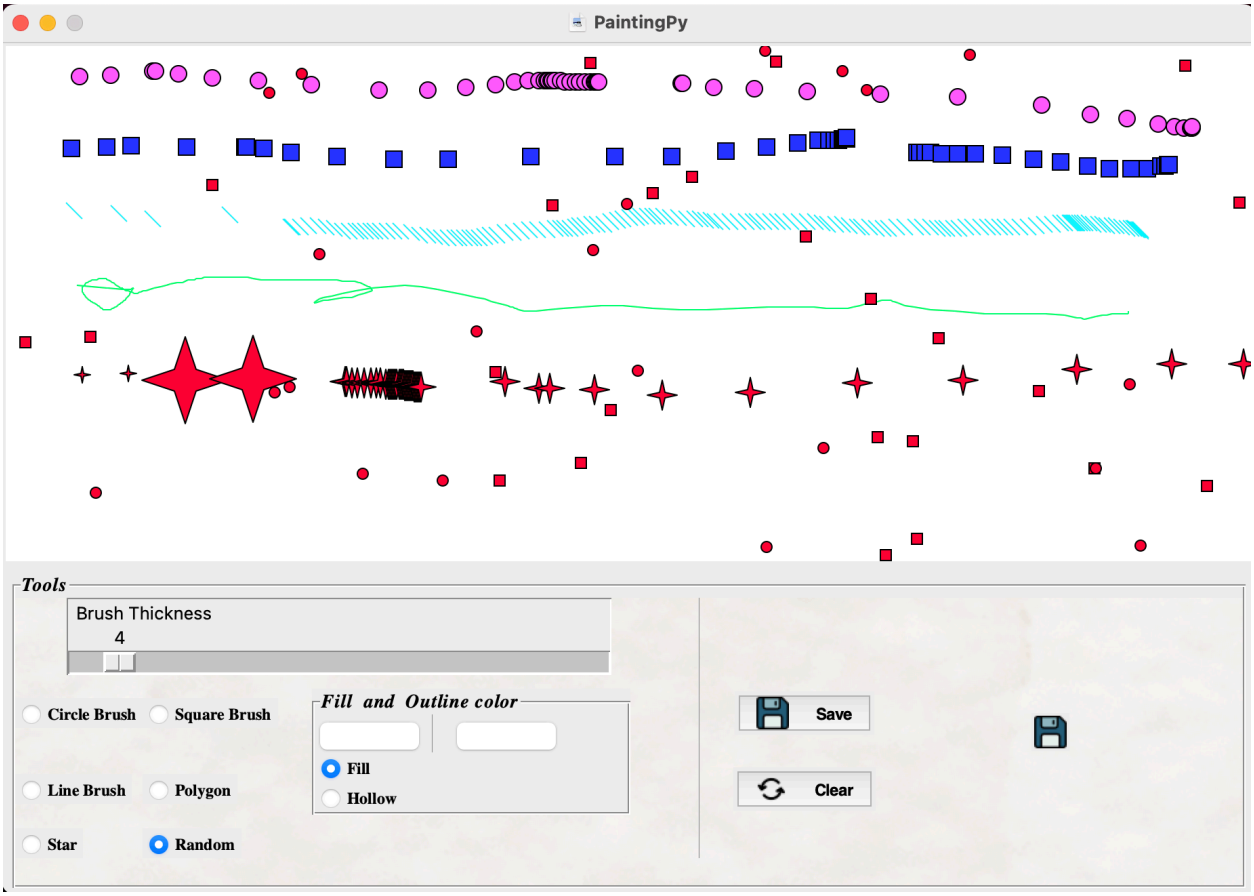

Fig 1: Painting GUI

a. Brushes Control

- By selecting different brushes, people can control timbres.
- By changing the sizes of the brushes, people can control the volumes
- Pitches can be changed by making the lines up or down on the canvas.

b. Others

- By clicking the “Save” button, users are able to save the generated music pieces.
- By clicking the “Clear” button, users are able to start their new work.

3. Design and Implementation

The program is implemented in Python. The project can be separated into three basic parts: Painting GUI implementation, Music generator implementation, and Music mapping.

a. Painting GUI Design

The GUI is implemented in tkinter. We designed buttons and interactive elements of different brushes and functions.

b. Music Generator Design

The music generator is designed with a rule-based method. There are five different timbres, which are represented by five different brushes. We recorded different scales with different instruments.

c. Music Mapping

In this step, we play the recorded notes with different timbres in Python when drawing on the canvas.

4. Changes Compared to the Proposal

Compared to the proposal, there are several changes:

a. Element controlled the timbres.

In the proposal, I tried to use brush colors to control the timbres, but I found that brushed shapes are more intuitive for users.

b. Instrument types.

In the proposal, I included violin and flutes as my instrument timbre, but I found that my teammates will be playing them, so I replaced them with guitar and Chinese Guzheng.

c. Random Brush

In my current work, I added a “random” brush, so it can be easier to play for improvisations.

5. Current Progress

Up to now, I already finished the Painting GUI's codes and the instrument timbres recording.

6. Challenges

One of the biggest challenges is implementing a human-computer interactive system. It's a heavy workload to write a program that allows people to draw and generate music at the same time. The idea of implementation is stated in Part 3. Fortunately, everything goes on smoothly so far.

7. Schedules

- Oct 25 - Nov 20: Finish the codes of painting-music mapping
- Nov 21 - Nov 30: Rehearsal, Writing Final Paper
- Dec 2: Concert
- Dec 5: Final Paper Due, Presentation