MathInMusic2023

Midterm Assignment for Math In Music course in 2023 Autumn.

What is this

The target is to create short music piece by machine with genetic algorithm. Meanwhile, we provide an easy API `midoWrapper` for `mido`. See the docstrings for more information.

For more detailed information, you can find our report in `report/report.md` or `report/report.pdf`.

Preparation

Make sure you have installed `python3` and `pip`. All used third parties are saved in the config text. You can use

```
git clone https://github.com/LeoDreamer2004/PKU-MathInMusic-2023.git
```

to copy the repository to your folder, and then execute in the command line within this folder:

```
pip install -r requirements.txt
```

How to use

We apply one demo to parse the midi and the other to train for music in genetic algorithm. Visit all the results in `./midi` folder.

```
python ./wrapperTest.py
python ./geneticAlgorithm.py
```

- `wrapperTest.py` will try to parse the `test.mid` and print the result. Meanwhile, it is supposed to generate a new midi file `random.mid` with two retrograde tracks.
- `geneticAlgorithm.py` will try to generate a midi file `result.mid` with genetic algorithm.

If you have passed the midterm, you can try to run the `main.py`, which support a GUI for you to play with.

The GUI is based on `pyqt5` and `pyqt_fluent`. Run in terminal:

```
python ./main.py
```

If you find an error message box, you probably need to install some third party modules. See the build section above. Enjoy it!

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