Universitat Pompeu Fabra Barcelona

SMC Master *in* Sound and Music Computing

Jingju Style Music generation with Feedforward VAE

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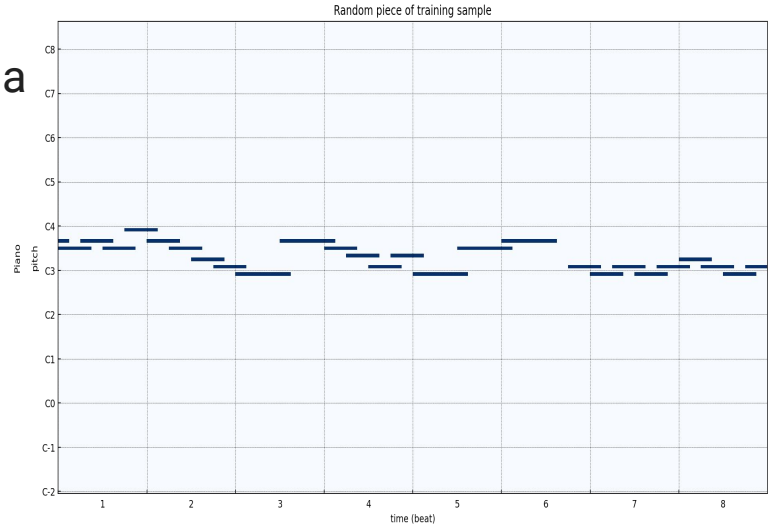
Source Code & Demo in Colab Notebook

Final Project Presentation. CMC, March 23th 2022

Motivation & Goal

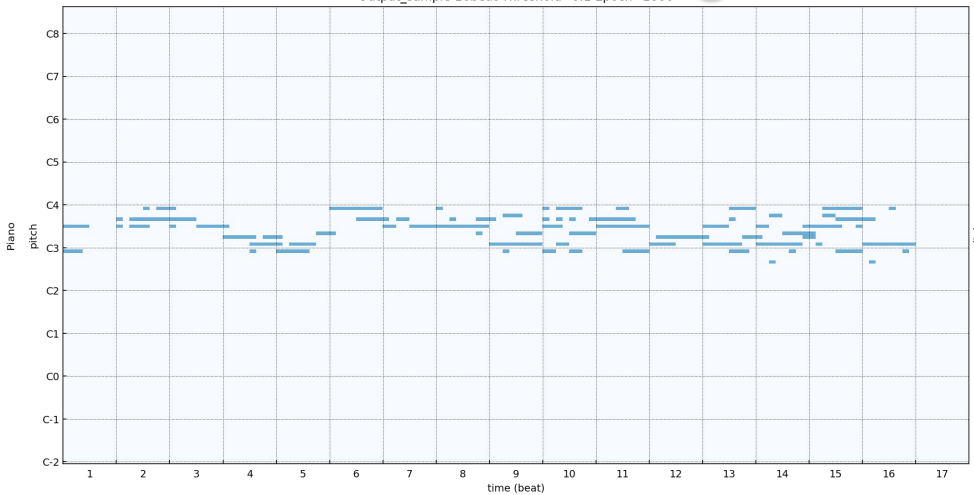
- To build a music generation system, based on a symbolic dataset [JingjuMusicScoresCollection-v3]. In the hope that Essential musical feature will be learned.
- Input: A piano roll representation of a fixed length jingju score which contains melody and accompaniment.
- Neural Network Structure: Feedforward Variational Auto-Encoder.
- Output: User controlled output, in the form of midi and audio.



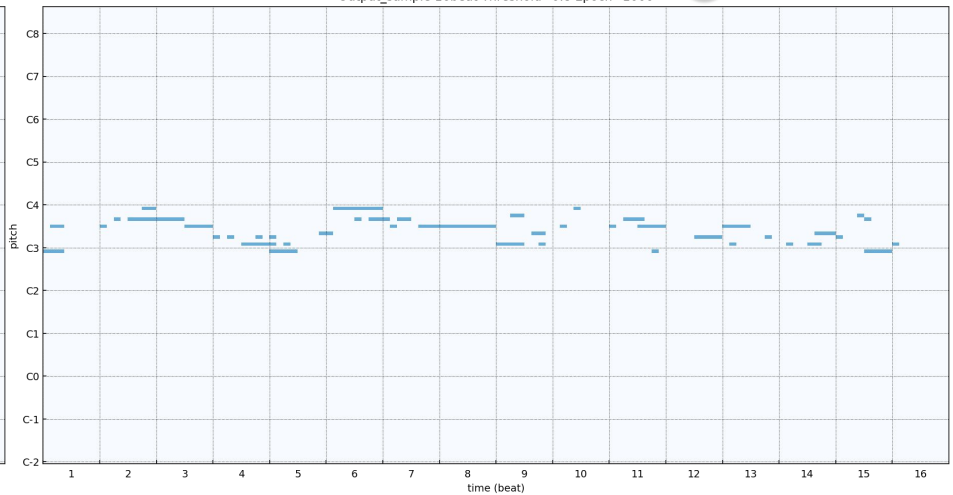
Results Analysis

- Pentatonic Scale feature is well learnt.
- Different Rhythmic patterns are captured. *Kuaiban(Allegro)*: *Manban(Adagio)*:
- Setting threshold can reveal more notes thus adding a sense of counterpoint

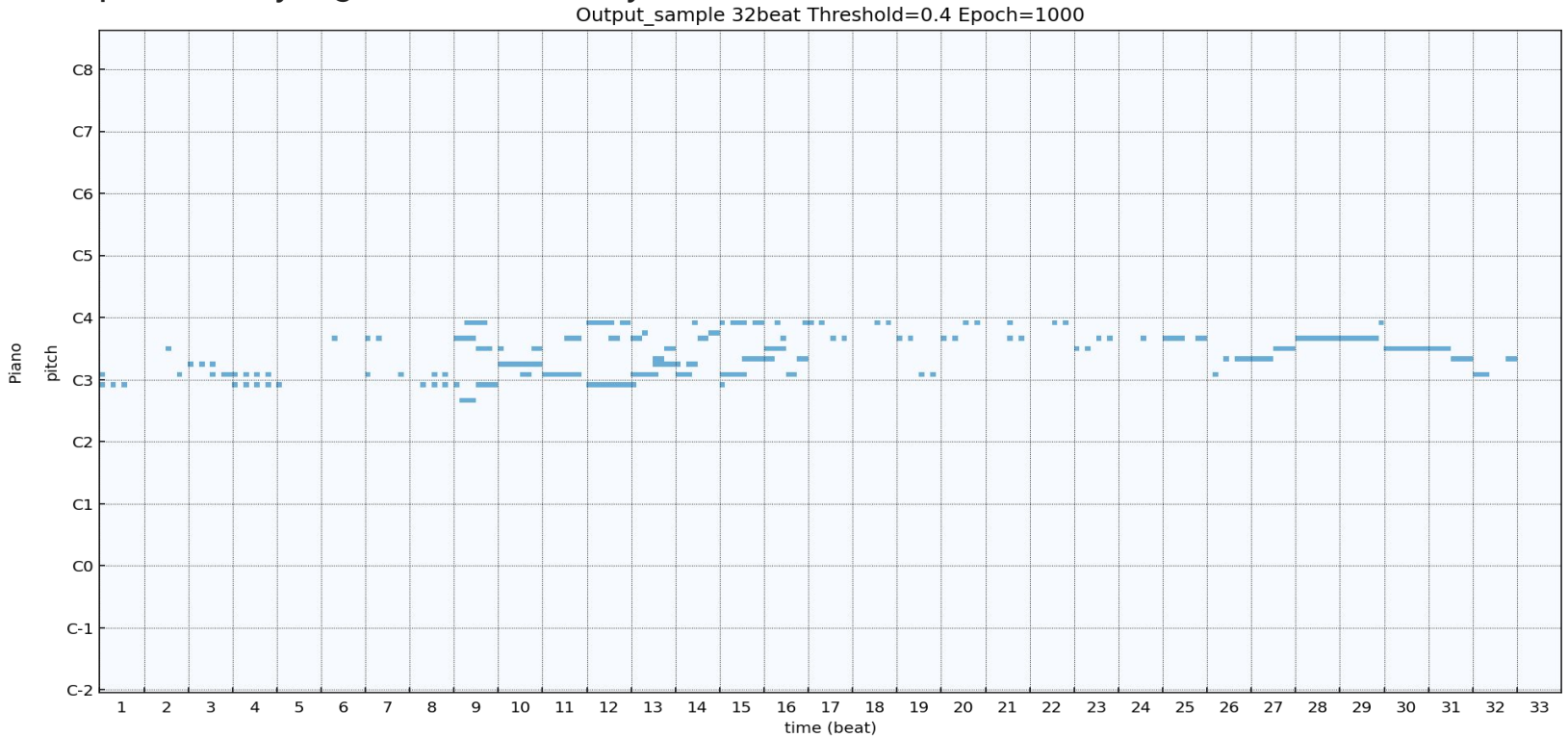
`threshold = 0.1`



`threshold = 0.8`



- Surprise: Every eight beat is one style of structure.



Issues and Future Improvements

- The length of training sample can affect the basic unit of music.
- Note B5 (V degree in E major) was more frequent
- Neural network structure: From feed forward neural networks to different network structures.
- Future Improvements:
  - Music generation with User interaction(e.g. Rhythmic pattern, Shengqiang(xipi, erhuang))
  - Different training scheme: generate music given motif by user.

REFERENCES

[1] Luo, Jing, et al. "MG-VAE: deep Chinese folk songs generation with specific regional styles." Proceedings of the 7th Conference on Sound and Music Technology (CSMT). Springer, Singapore, 2020.

[2] Caro Repetto R, Serra X. A Collection of music scores for corpus based jingju singing research. In: Hu X, Cunningham SJ, Turnbull D, Duan Z. ISMIR 2017 Proceedings of the 18th International Society for Music Information Retrieval Conference; 2017 Oct 23-27; Suzhou, China. [Suzhou]: ISMIR; 2017. 46-52.