

```
readXML.py xmlGenera...
                   ~/xmlMusicGen — -zsh
                                                                                    matrixMusi... requiremen... refactored...
                                                                                                                                     mxlConvert... musicGen.py
                                                                                                                                                                 log.txt
                                                                                                                                                                                       forgetTest....
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
                                                                 import xmlGenerate
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
                                                                 import random
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
                                                                 import numpy as np
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
                                                                 import fluidsynth
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
                                                                 import time
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
                                                                 matrix = xmlGenerate.getMatrix()
Now playing: ('A4',)
                                                                 chord_list = xmlGenerate.getChordList()
Now playing: ('A4',)
Now playing: ('A4',)
                                                                 chord_index = xmlGenerate.getChordIndex()
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
                                                                 # MATRIX MANIPULATION
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
                                                                 # Higher = more entropy, Lower = less changes
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
                                                                 # Emphasizes/Minimizes the existing row probability vectors
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
                                                                 def scale_temperature(matrix, temperature=1.0):
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
                                                                      assert temperature > 0, "Temperature must be positive"
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
                                                                      log_matrix = np.log(matrix + 1e-9) # Avoid log(0)
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
                                                                      scaled = np.exp(log_matrix / temperature)
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
                                                                      scaled = np.maximum(scaled, 0)
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
                                                                      scaled /= scaled.sum(axis=1, keepdims=True)
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
                                                                      return scaled
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
                                                                 def inject_noise(matrix, epsilon=0.01):
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
                                                                      noisy = matrix + epsilon * np.random.rand(*matrix.shape)
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
                                                                      noisy /= noisy.sum(axis=1, keepdims=True) # Renormalize rows
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
                                                                      return noisy
Now playing: ('G4',)
Now playing: ('G4',)
Now playing: ('A3', 'A4', 'C4*', 'D3', 'F3', 'F4')
Now playing: ('B3', 'D4', 'F3', 'G2%, 'G4')
Now playing: ('B3', 'D4', 'G4')
Now playing: ('B3', 'D4', 'G1', 'G4')
                                                                 matrix = scale_temperature(matrix, 0.5)
Now playing: ('B3', 'D4', 'G1', 'G4')
                                                                 # matrix = inject_noise(matrix, 0.0001)
Now playing: ('B3', 'D4', 'G1', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C4', 'E4', 'G4')
                                                                                ---- TRAJECTORY THROUGH THE ROW STOCHASTIC MATRIX --
Now playing: ('C2', 'C4', 'E4', 'G4')
                                                                 initial = random.choice(chord_list)
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
                                                                 generated = [initial]
Now playing: ('C2', 'C4', 'E4', 'G4')
                                                                                                                                                                  Moon River
Now playing: ('C2', 'C4', 'E4', 'G4')
                                                                 for _ in range(1000):
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
                                                                      i = chord_index[initial]
                                                                                                                                                                    (low temp)
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
                                                                      probs = matrix[i]
^CPlayback interrupted by user (Ctrl+C).
                                                                      j = np.random.choice(len(chord_list), p=probs)
Fluidsynth resources cleaned up.
(fooMUSIC) ethansie@Ethans-MacBook-Pro xmlMusicGen %
                                                                                                                                      LF UTF-8 Python & main Setch (7) GitHub 🗢 Git (1) 🌣
                                                            matrixMusic.py 29:37
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