~/xmlMusicGen — -zsh

```
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A4',)
Now playing: ('A4',)
Now playing: ('A4',)
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
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')
Now playing: ('B3', 'D4', 'G1', 'G4')
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')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
^CPlayback interrupted by user (Ctrl+C).
Fluidsynth resources cleaned up.
(fooMUSIC) ethansie@Ethans-MacBook-Pro xmlMusicGen %
```

readXML.py | xmlGenera... | matrixMusi... | requiremen... | refactored... | db.py | mxlConvert... | musicGen.py | log.txt | debug.py | forgetTest....

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    scaled = np.exp(log_matrix / temperature)
    scaled = np.maximum(scaled, 0)
    scaled /= scaled.sum(axis=1, keepdims=True)
    return scaled

def inject_noise(matrix, epsilon=0.01):
    noisy = matrix + epsilon * np.random.rand(*matrix.shape)
    noisy /= noisy.sum(axis=1, keepdims=True)  # Renormalize rows
    return noisy



matrix = scale_temperature(matrix, 0.5)
# matrix = inject_noise(matrix, 0.0001)


# --------------- TRAJECTORY THROUGH THE ROW STOCHASTIC MATRIX ----------
initial = random.choice(chord_list)
generated = [initial]

for _ in range(1000):
    i = chord_index[initial]
    probs = matrix[i]
    j = np.random.choice(len(chord_list), p=probs)
```

matrixMusic.py 29:37 LF UTF-8 Python main Fetch GitHub Git (1)

~/xmlMusicGen — -zsh

```
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A4',)
Now playing: ('A4',)
Now playing: ('A4',)
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
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')
Now playing: ('B3', 'D4', 'G1', 'G4')
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')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
^CPlayback interrupted by user (Ctrl+C).
Fluidsynth resources cleaned up.
(fooMUSIC) ethansie@Ethans-MacBook-Pro xmlMusicGen %
```

readXML.py | xmlGenera... | matrixMusi... | requiremen... | refactored... | db.py | mxlConvert... | musicGen.py | log.txt | debug.py | forgetTest....

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    scaled = np.maximum(scaled, 0)
    scaled /= scaled.sum(axis=1, keepdims=True)
    return scaled

def inject_noise(matrix, epsilon=0.01):
    noisy = matrix + epsilon * np.random.rand(*matrix.shape)
    noisy /= noisy.sum(axis=1, keepdims=True)  # Renormalize rows
    return noisy



matrix = scale_temperature(matrix, 0.5)
# matrix = inject_noise(matrix, 0.0001)


# --------------- TRAJECTORY THROUGH THE ROW STOCHASTIC MATRIX ----------
initial = random.choice(chord_list)
generated = [initial]

for _ in range(1000):
    i = chord_index[initial]
    probs = matrix[i]
    j = np.random.choice(len(chord_list), p=probs)
```

matrixMusic.py 29:37 LF UTF-8 Python main Fetch GitHub Git (1)

~/xmlMusicGen — -zsh

```
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A3', 'A4', 'B2', 'B4', 'E4b')
Now playing: ('A4',)
Now playing: ('A4',)
Now playing: ('A4',)
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('B3', 'B4', 'D4', 'E3', 'G3', 'G4')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
Now playing: ('A2', 'A4', 'C4#', 'E4', 'G3')
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')
Now playing: ('B3', 'D4', 'G1', 'G4')
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')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
Now playing: ('C2', 'C4', 'E4', 'G4')
^CPlayback interrupted by user (Ctrl+C).
Fluidsynth resources cleaned up.
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matrix = scale_temperature(matrix, 0.5)
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initial = random.choice(chord_list)
generated = [initial]

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    probs = matrix[i]
    j = np.random.choice(len(chord_list), p=probs)
```

matrixMusic.py 29:37 LF UTF-8 Python main Fetch GitHub Git (1)

Moon River (low temp)

~/xmlMusicGen — -zsh

```
Now playing: ('B2', 'D4')
Now playing: ('B2', 'D4', 'G2')
Now playing: ('D4', 'G2')
Now playing: ('E2', 'E4')
Now playing: ('E4', 'G2')
Now playing: ('E4', 'G2')
Now playing: ('A4', 'C5', 'F2', 'F4')
Now playing: ('A2', 'A4', 'C5', 'F4')
Now playing: ('A4', 'B2', 'C5')
Now playing: ('D3', 'F4')
Now playing: ('C5', 'D3', 'E3', 'E5', 'F4')
Now playing: ('C5', 'E3', 'E5')
Now playing: ('C5', 'E3', 'E5')
Now playing: ('C5', 'E3', 'E5')
Now playing: ('B4', 'D3', 'D5')
Now playing: ('B4', 'D3', 'D5')
Now playing: ('B4', 'D3', 'D5')
Now playing: ('B4', 'D3', 'D5')
Now playing: ('A4', 'C3', 'C5')
Now playing: ('A4', 'B2', 'B4', 'C3', 'C5', 'G4')
Now playing: ('B2', 'B4', 'G4')
Now playing: ('B2', 'B4', 'G4')
Now playing: ('A3', 'B3', 'D4', 'G3')
Now playing: ('B3', 'D4', 'F3', 'G3')
Now playing: ('B3', 'D4', 'F3', 'G3')
Now playing: ('A3', 'B3', 'D4', 'G3')
Now playing: ('A3', 'B3', 'D4', 'G3')
Now playing: ('A3', 'B3', 'D4', 'G3')
Now playing: ('A3', 'B3', 'D4', 'G3')
Now playing: ('B3', 'D4', 'F3', 'G3')
Now playing: ('B3', 'D4', 'F3', 'G3')
Now playing: ('B3', 'D4', 'F3', 'G3')
Now playing: ('B3', 'D4', 'F3', 'G3')
Now playing: ('B3', 'D3', 'D4', 'F3', 'G3')
Now playing: ('B3', 'D3', 'D4', 'G3')
Now playing: ('B3', 'D3', 'D4', 'G3')
Now playing: ('B3', 'D3', 'D4', 'F3', 'G3')
Now playing: ('B3', 'D4', 'F3', 'G3')
Now playing: ('B3', 'D4', 'F3', 'G3')
^CPlayback interrupted by user (Ctrl+C).
Fluidsynth resources cleaned up.
(fooMUSIC) ethansie@Ethans-MacBook-Pro xmlMusicGen % python3 matrixMusic.py extracted_mxl/moon.xml
First measure, grid of notes:
Now playing: ('C3', 'E5')
Now playing: ('E3', 'E5')
Now playing: ('E3', 'E5')
Now playing: ('E5', 'G3')
Now playing: ('D3', 'D5', 'G3')
Now playing: ('D3', 'D5')
Now playing: ('D3', 'D5')
Now playing: ('A4', 'C5', 'F2', 'F4')
Now playing: ('A4', 'C3', 'C5', 'F4')
Now playing: ('A4', 'C3', 'C5', 'F4')
Now playing: ('A2', 'A4', 'C3', 'C5', 'F4')
Now playing: ('A4', 'C3', 'C5', 'F4')
Now playing: ('A4', 'C3', 'C5', 'F3', 'F4')
Now playing: ('A4', 'C3', 'C5', 'F4')
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    scaled = np.maximum(scaled, 0)
    scaled /= scaled.sum(axis=1, keepdims=True)
    return scaled

def inject_noise(matrix, epsilon=0.01):
    noisy = matrix + epsilon * np.random.rand(*matrix.shape)
    noisy /= noisy.sum(axis=1, keepdims=True)  # Renormalize rows
    return noisy



matrix = scale_temperature(matrix, 2.5)
# matrix = inject_noise(matrix, 0.0001)


# ———————— TRAJECTORY THROUGH THE ROW STOCHASTIC MATRIX ————————
initial = random.choice(chord_list)
generated = [initial]

for _ in range(1000):
    i = chord_index[initial]
    probs = matrix[i]
    j = np.random.choice(len(chord_list), p=probs)
```

matrixMusic.py 107:45 LF UTF-8 Python main Fetch GitHub Git (1)

Moon River (high temp)