Procedural Music

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What we’ve done so far

Simple command line

- Load
- Generate
- Save
- Play

1-1 note transition generation

Process

- Grab sample
- Create Markov Table
- WFC (Wave Function Collapse)
- Finished output

Visual Steps

Midi File

E	O							O							
C		O					O			O					O
A				O		O						O		O	
F					O								O		

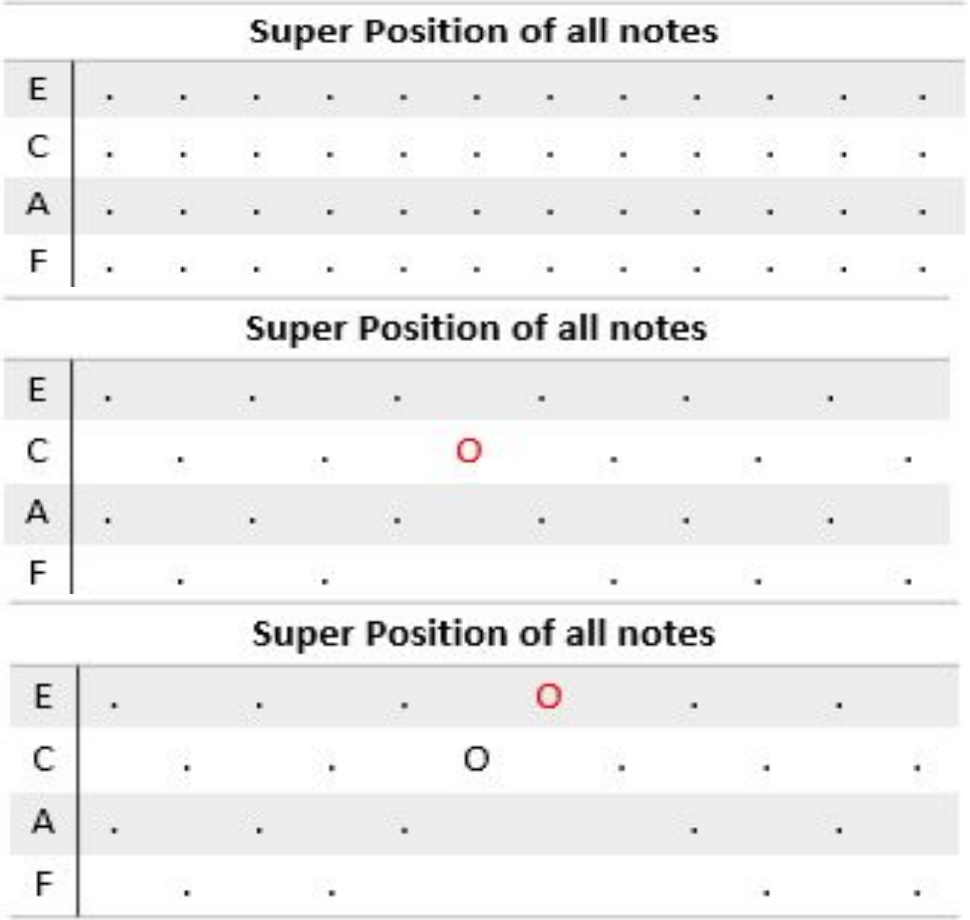
Markov Table

	E	C	A	F
E	-	2	-	-
C	1	-	2	-
A	-	2	-	2
F	-	-	2	-

Markov Table

	E	C	A	F
E	-	100%	-	-
C	33%	-	66%	-
A	-	50%	-	50%
F	-	-	100%	-

WFC

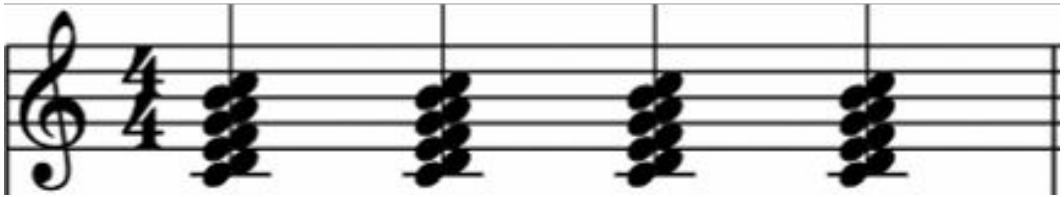


Markov Table				
	E	C	A	F
E	-	100%	-	-
C	33%	-	66%	-
A	-	50%	-	50%
F	-	-	100%	-

Lowest Shannon Entropy:

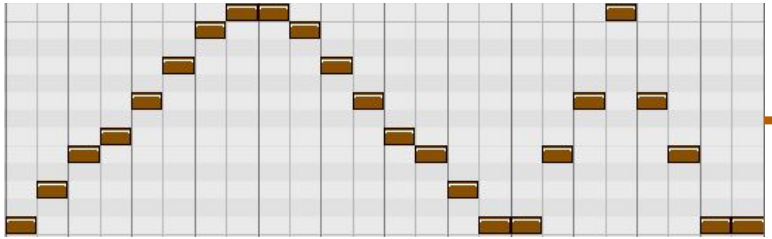
$$\mathrm{H}(X) = -\sum_{i=1}^{n} \mathrm{P}(x_i) \log_b \mathrm{P}(x_i)$$

Visual Representation



Visual Representation

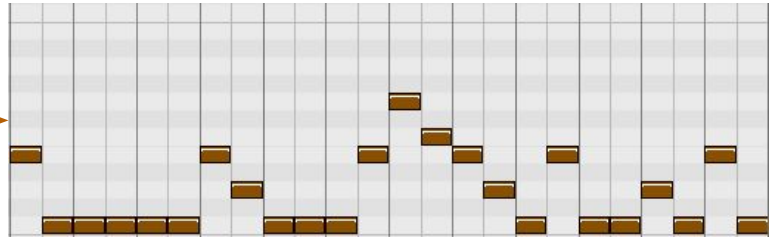
Input MIDI



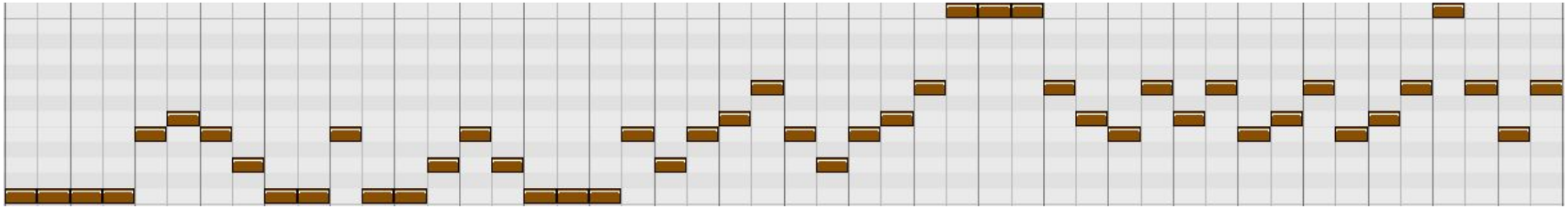
WFC

Markov Chains

Output MIDI



Longer Output



Plans

- Work on a GUI
- Add more note transitions
- Ex: 2-2 (chords)