

GENERATIVE MUSIC ASSIGNMENT

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SUMMARY

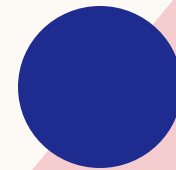
Introduction

Markov chains

Implementation

Code

Sonic work

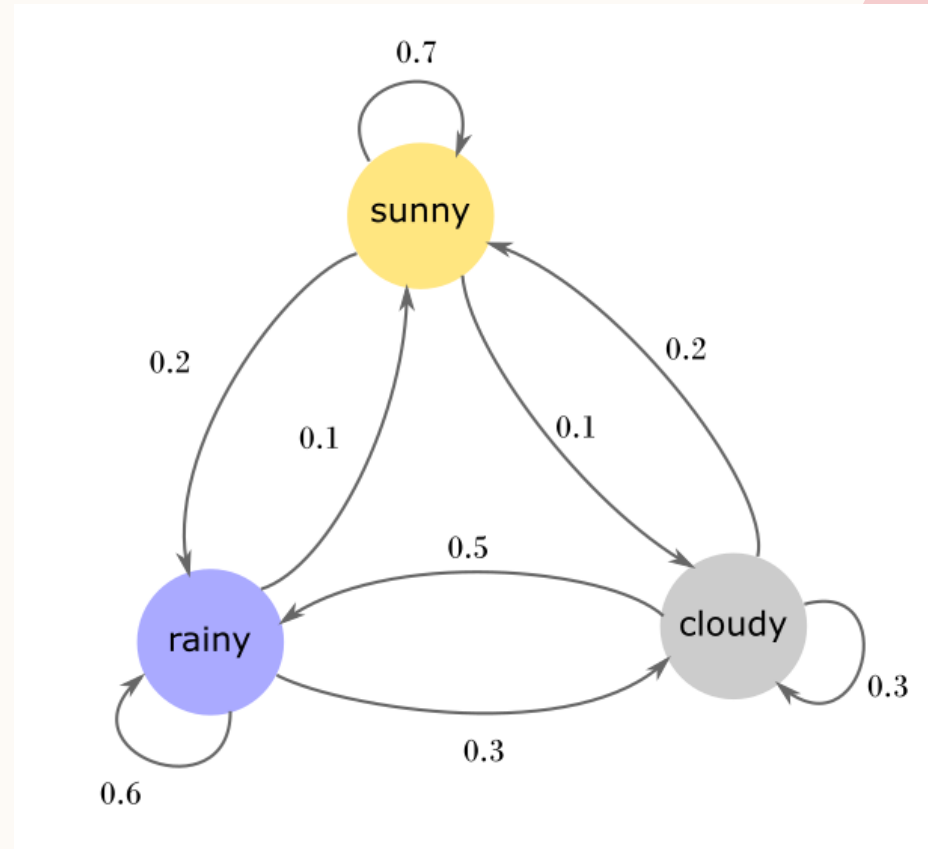


GENERATIVE MUSIC

- Algorithmic or procedural generation, rather than being composed by a human musician
- Rules, parameters or constraints
- Sound installations, music performances, video games
- Ever-changing, non-repeating musical experience

MARKOV CHAINS

- Future state only depends on the present state
- Set of possible values or states and transition probabilities between states










MY IMPLEMENTATION

- Using existing compositions to create Markov chains
- MIDI -> string -> tokens (n-grams) -> Markov chain

```
n_81_eighth n_54_eighth p_0.5 n_80_eighth n_61_eighth ↵
↵p_0.5 n_81_eighth n_66_quarter p_0.5 n_80_eighth ↵
↵p_0.5 n_81_eighth n_50_eighth p_0.5 n_76_eighth ↵
↵n_57_eighth p_0.5 n_81_eighth n_64_quarter p_0.5 ↵
↵n_76_eighth p_0.5 n_76_half n_64_half p_0.5 n_60_16th
```

```
> 0000 = {tuple: 3} ('n_45_whole', 'n_48_whole', 'p_8.0')
> 0001 = {tuple: 3} ('n_48_whole', 'p_8.0', 'n_45_whole')
> 0002 = {tuple: 3} ('p_8.0', 'n_45_whole', 'n_48_whole')
> 0003 = {tuple: 3} ('n_45_whole', 'n_48_whole', 'p_4.0')
> 0004 = {tuple: 3} ('n_48_whole', 'p_4.0', 'n_40_whole')
```

- Markov chain using dictionary

```
>  ('n_45_whole', 'n_48_whole', 'p_8.0') = {list: 2} [('n_48_whole', 'p_8.0', 'n_45_whole'), ('n_48_whole', 'p_8.0', 'n_45_whole')]
>  ('n_48_whole', 'p_8.0', 'n_45_whole') = {list: 2} [('p_8.0', 'n_45_whole', 'n_48_whole'), ('p_8.0', 'n_45_whole', 'n_48_whole')]
>  ('p_8.0', 'n_45_whole', 'n_48_whole') = {list: 2} [('n_45_whole', 'n_48_whole', 'p_4.0'), ('n_45_whole', 'n_48_whole', 'p_4.0')]
>  ('n_45_whole', 'n_48_whole', 'p_4.0') = {list: 3} [('n_48_whole', 'p_4.0', 'n_40_whole'), ('n_48_whole', 'p_4.0', 'n_36_whole'), ('n_48_whole', 'p_4.0', 'n_45_quarter')]
>  ('n_48_whole', 'p_4.0', 'n_40_whole') = {list: 1} [('p_4.0', 'n_40_whole', 'n_55_whole')]
>  ('p_4.0', 'n_40_whole', 'n_55_whole') = {list: 1} [('n_40_whole', 'n_55_whole', 'p_8.0')]
>  ('n_40_whole', 'n_55_whole', 'p_8.0') = {list: 1} [('n_55_whole', 'p_8.0', 'n_40_whole')]
```

- Yiruma: River Flows in You and Kiss the Rain
- Hans Zimmer: Time and He's a pirate



CODE AND RESULT