



Melodic Chains

Music Generation using Markov Chains

REOF-MAS

Goal of the project

- Algorithmic composition using Markov chains from MIDIls
 - Current focus on generating short melodies
 - Making a whole song based on those
- Something definitely NOT mere generation
 - Agents collaborate to generate valuable/novel/surprising artefacts
 - Robust evaluation methods

Objectives – Environment setup

- Repository setup ✓
 - Source and Documentation separation, all works fine..
- Virtual environment ✓
- 3rd Party Library Installations ✓
- Boilerplate structure of project ✓
 - Thanks to Creamas

Objectives – Inspiration set, MCs

- Parsing compositions from MIDI files ✓
 - Music21 library and some problems - manual installation ☹
- Representation of the musical composition is HARD!
 - There are many variables to consider:
 - Note, duration, pitch, motif, chroma, key, loudness, mode, tempo, timbre ... and possibly more.
 - Current FOCUS (one step a time) ✓
 - Markov Chain states = Note & Duration ✓
 - All songs are transposed to the same key ✓
 - Transformational creativity - mutable chains

Objectives – Artefact Evaluation

- By Agents – (ComposerAgent, AudienceAgent, CoordinatorAgent?)
 - Value: Zipf's Law (Monterey Mirror, Manaris et al.) ✓
 - Novelty: String comparison methods, pseudo-likelihood?
 - Pitch interval, note duration, similarity score ...
 - Possible different method to measure surprisingness (Audience Agent)
- By Human judges (external feedback)
 - After some iterations evaluate the artefact and transform it accordingly
 - Still under consideration

Possible Improvements

- There are endless possibilities...
- Preprocess - Select what you need from MIDI files!
 - Staccato filter, Allegro filter ...
 - Avoid repetitive patterns (let the agents select different states – mutate)
- Setting a theme
- Hard-coded rhythms
- LIMITED TIME – reconsider wisely
- ...

Any questions/suggestions?