Machine Learning and Music Composition

Daniel Woeste

Introduction

Outline

A. Background
    a. Music
    b. Machine Learning
B. Methods
    a. Markov Chains
    b. Randoms Forests
    c. Neural Nets
C. Evaluation
D. Conclusion

Background

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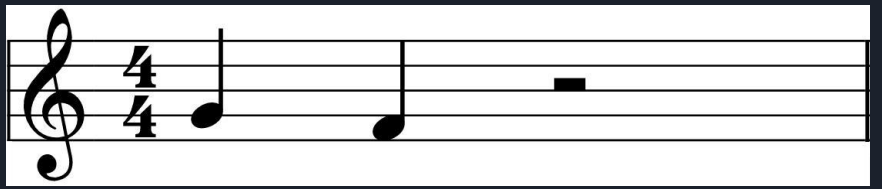
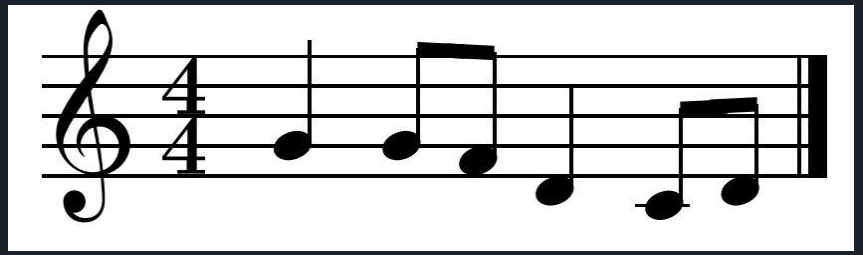
Melodic Progression

A melodic progress is the interval between two notes



Melody

Combining several intervals together gives us a melody



Consonance Vs. Dissonance (add audio here)

Consonance

- Multiple notes played together harmoniously

Dissonance

- Chords that clash

Texture

Homophony

- Single melodic line
- May be accompanied or alone

Polyphony

- Multiple melodic lines
- All share equal importance

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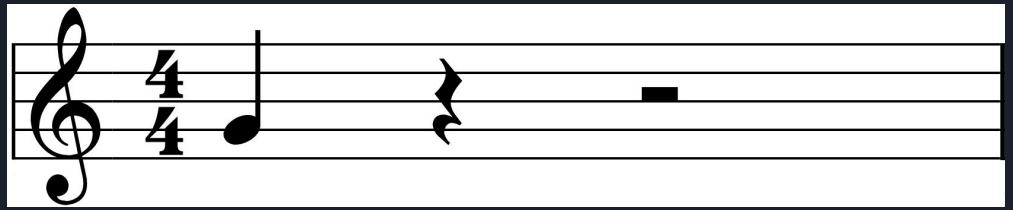
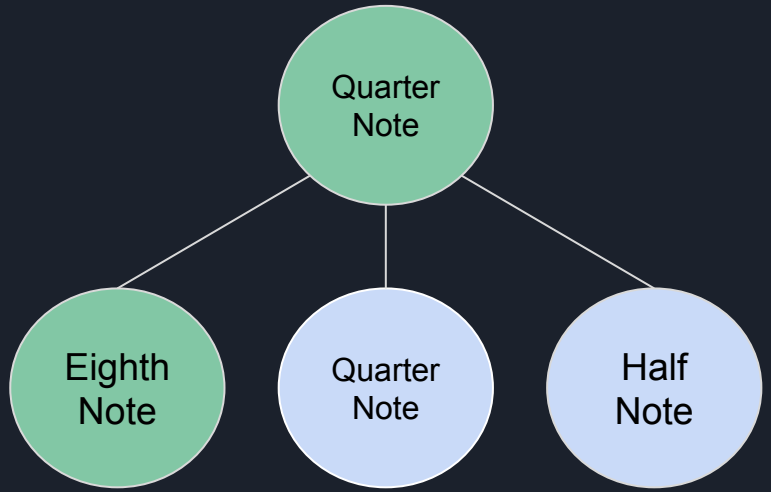
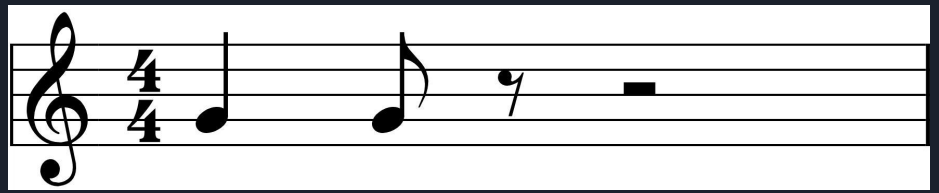
Decision Trees

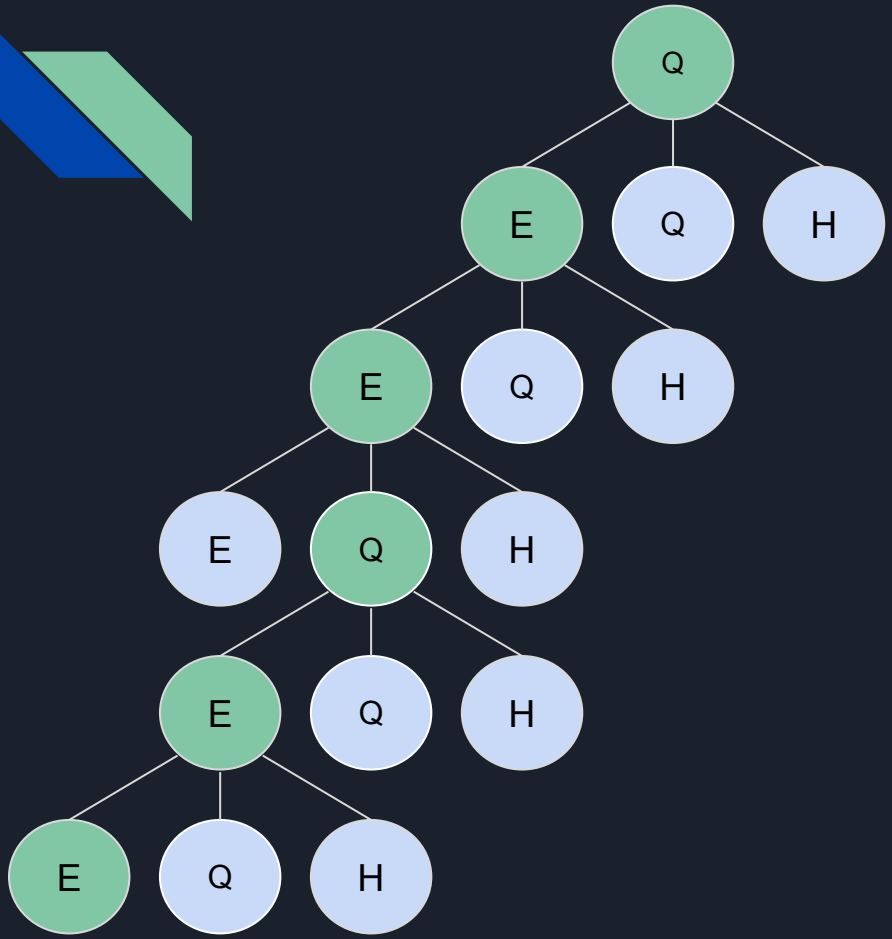
- Branching structure that represent test and possible outcomes
- (explain decision trees more)

Quarter Note




Quarter Note
Eighth Note
Quarter Note
Half Note




Q
E
Q
H
E
Q
H
E
Q
H
E
Q
H
E
Q
H

Methods

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Markov Chains

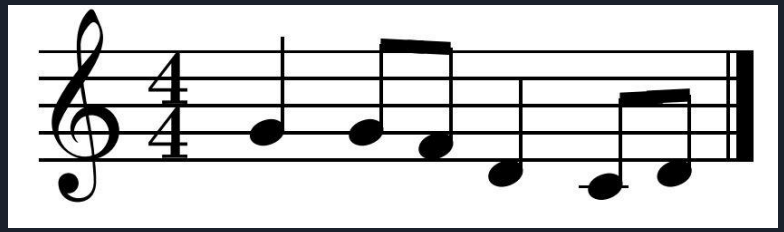
Multi Chain method

One-point mutation

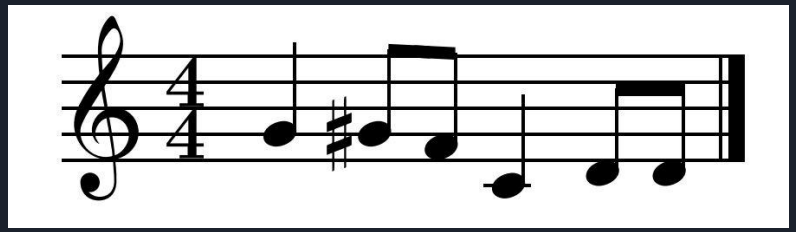
Post processing on the written melody is done to make the music more complex

One-point mutation is an operation that traverses over the melody with a small percentage chance to change a note value.

Before



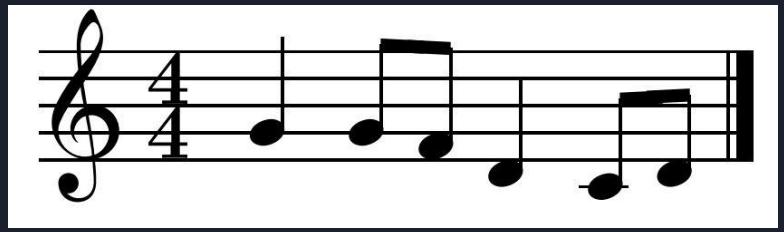
After

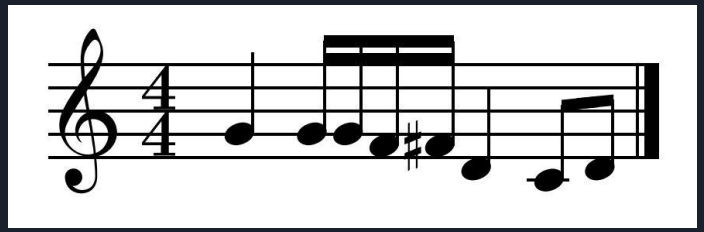


Note Splitting

Similar to one-point mutation

- Duration instead of pitch





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