Genetic Generation of Musical Accompaniments

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Introduction

Our program will:

- Provide musical accompaniment when given a melody
- Change the notes it plays along with the given melody
- Use a genetic algorithm to accomplish its task

Accompaniment

- It’s relatively easy for a person to compose a melody.
- Creating a accompaniment to go along with that melody can require an above-average understanding of music theory.
- While simple music generation programs exist, it would be beneficial to have artificially intelligent accompaniment
  - Computer-generated music can sound stale and boring
  - Accompaniment should be able to be “creative”

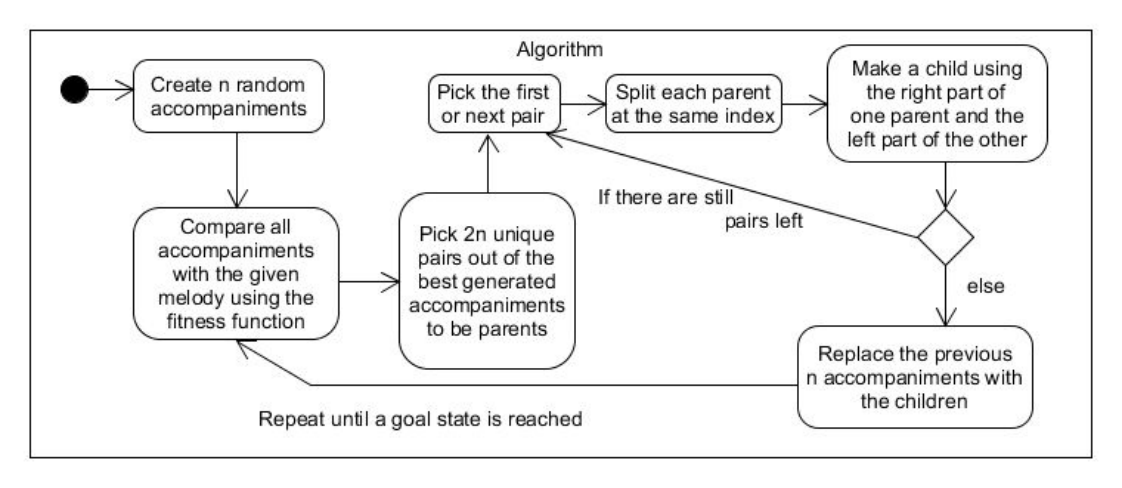
Existing Research

- Polyphonic Accompaniment Using Genetic Algorithm with Music Theory
  - Chien-Hung Liu and Chuan-Kang Ting
  - Uses music theory for fitness function

- WolframTones
  - Cellular Automata

Tentative Plans

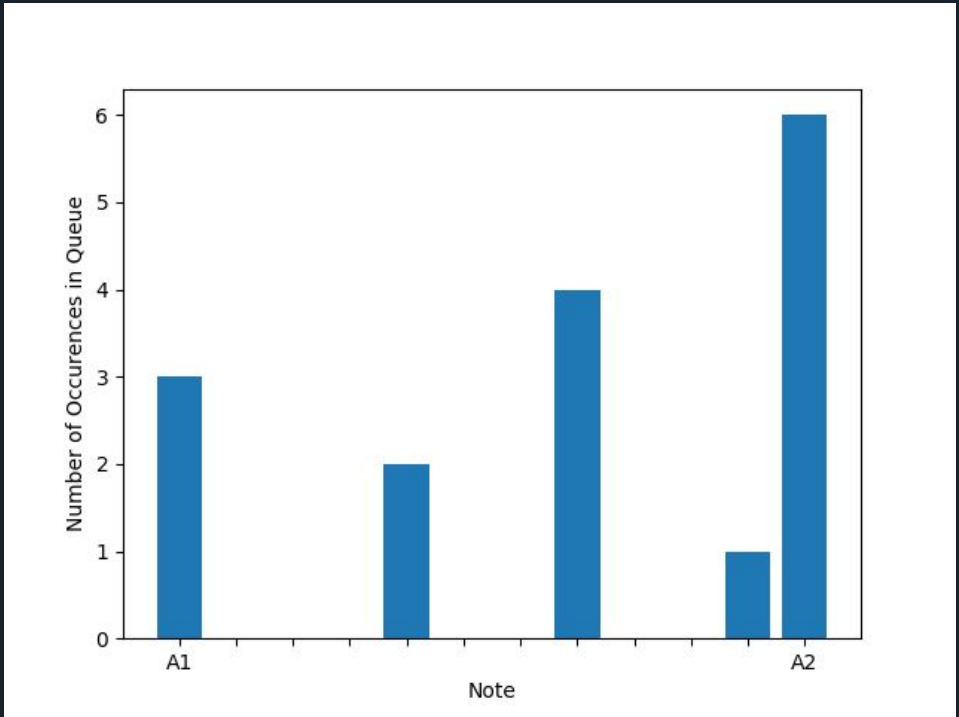
- We intend to use a genetic algorithm to produce the accompaniment.



- Machine learning could improve the population generation process.

Tentative Plans

- The melody will be saved as both a histogram and a queue



- Old notes get removed from the queue so the AI is not considering very old parts of the input

Tentative Plans

- The harmonies will be made of randomly-generated pairs of histograms and queues
- The fitness function will compare the pairs of the population with the pairs of the melody based on their harmonic similarities

Conclusion

- With this program anybody with a melody can create a pleasant sounding accompaniment.
- This will aid people who want to go beyond creating or picking out one-track pieces but are not comfortable creating harmonies.