

Philosophy of Computation - Term Project Proposal

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My project is to investigate a concrete example case of comparing a symbolist to connectionist approach in an intelligence-relevant task: composing baroque music. I think that this is a particularly good task because success is easy to measure by humans but hard to measure by machines, so there is probably no short cut around developing some sort of “musical intelligence” for a music generator to create decent-sounding music.

In my project I will design a two music generators, one symbolism inspired and one connectionism inspired:

- The rough idea for the symbolist music generator will be to empirically find common patterns in the music samples and then program some algorithm that stitches them together in some context-sensitive way; every piece of the resulting music will have been handled explicitly by the program.
- The rough idea for the connectionist music generator will be to train a neural network on a set of sample data, yielding a generative algorithm. If time permits, I may implement some tweaks to this setup to make it work better specifically for music or the like.

For the conclusion of the project, I will compare the results qualitatively and suggest explanations for their differences in terms of a symbolist-connectionist comparison. I will explain the broader implications that my results support in the specifics of the symbolist-connectionist views on human cognition.

I choose baroque music (or some subset of it) because it has relatively few dimensions to its data (it is usually played on one instrument, the harpsichord, which has little control over note velocity or length) while still being interesting to listen to. Additionally, there is a trove of baroque music MIDI files freely available online which are excellent resources for training music generators and judging their stylistic accuracy. Lastly, in the interest of feasibility, programming a music generator for this kind of music has been decently documented online, so I think I can get things up and running within the amount of time left in the semester without “reinventing the wheel” for music generation (involving lots of programming that is not relevant to my central prompt).

Possible Change: If I research / we talk in class about some divisions within the connectionist school of thought (such as normal neural networks and recurrent neural networks), I may be able to implement that into my project by comparing two connectionist approaches to music generation rather than one symbolist and one connectionist. I think of this because perhaps the symbolist part of this project would just be an exercise in beating a dead horse.