ELECTRONIC MUSIC GENERATION WITH MAGENTA

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The project is an investigation of the possibility of artificial intelligence capable of composing music. In particular, a recurrent neural network is trained on MIDI files of electronic music. The recurrent neural network has two layers and each layer consists of 64 Long Short-Term Memory (LSTM) cells with attention. Attention allows the model to more easily access past information without having to store that information in the RNN cell's state. MIDI files used for training is obtained from the Million Song Dataset and the Lakh MIDI Dataset. The trained model is able to generate melodies based on given inputs. The model achieved 84% accuracy on the training data. This result is limited by the amount of training data and computing power that was available during the time of the project. Based on the result, it can be concluded that with enough training data and computing power, a model that is able to generate music indifferentiable from a human composer/musician is attainable. However, the question regarding aesthetic value of the generated music and the nature of the generation process remains, but such questions belong to the field of philosophy, not computer science. An interactive demo was also built with the trained model, using which a human agent is able to feed input into the model with a MIDI keyboard and get realtime feedback from the model.