

Generation of musical compositions is one of the hardest tasks for artificial intelligence where most of the current approaches struggle with long term coherence of the generated compositions. This work aims to demonstrate how deep learning models for generating music can be externally controlled to produce compositions with long term coherence, polyphony, and multiple instruments. We work with classical music ranging from compositions for piano through string quartet and up to symphonic orchestral compositions. To control the generation process, we take inspiration from the abstract notion of musical form: normally a high-level description of how similar and dissimilar passages are arranged throughout a composition, we use it as a recipe for generating a coherent composition. To this end, we (1) design a sufficiently general music similarity pseudometric from existing methods, (2) extract musical form from the training data by applying a clustering algorithm over the similarity values, (3) train three models that generate similar and locally coherent dissimilar musical fragments, and (4) design a way how to use the musical forms during the generation process to orchestrate the inference of the three models to generate whole compositions from musical fragments. We show what is the performance of the transformer generative models for generating musical fragments when trained by presenting one-to-many training examples. Multiple runs of the variant generating model given a same single input fragment can be used as a palette for variations inspiration to the human composers. To evaluate the results of the generation system, we experimented with adaptation of the Fréchet inception distance for music, which suggests that the generator-produced compositions are in some sense close to compositions by human authors. However, the truly relevant evaluation is whether the system has been able to produce compositions engaging for human listeners (or performers). Based on the generated samples, we believe that it has had some success, but we encourage the readers to judge for themselves.