

## Forward Conditional Restricted Boltzmann Machines for the Generation of Music

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**Abstract :** Recently, the application of deep learning to music has gained popularity. Its true potential, however, has been largely unexplored. In this paper, a new idea for representing the dynamic behavior of music is proposed. A "forward" conditional RBM takes into account not only preceding but also future samples during training. Though this may sound controversial at first sight, it will be shown that it makes sense from a musical and neuro-cognitive perspective. The model is applied to reconstruct music based upon the first notes and to improvise in the musical style of a composer. Different to expectations, reconstruction accuracy with respect to a regular CRBM with the same order, was not significantly improved. More research is needed to test the performance on unseen data.

**Keywords :** deep learning, restricted boltzmann machine, music generation, conditional restricted boltzmann machine (CRBM)

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