

# MOMENTS: A CONTINUOUS GENERATIVE INSTALLATION FOR MUSEBOTS



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## **Abstract**

*Moments* is a continuously running musical meta-creation that explores Moment-form, a term coined by Stockhausen to describe music that avoids directed narrative curves, and instead exists within stasis. The music is meant to remain in the background, and not draw attention to itself. Created by ensembles of

## **Keywords**

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musical agents—musebots—that assume musical roles in both the creation and performance of each 10 minute composition, each generated work is unique, mercurial, yet compositional—rather than improvisational—in nature.

## **1. DESCRIPTION**

*Moments* continues the composer's research into musebots (Eigenfeldt et al. 2015). Musebots are independent intelligent musical agents that both generate an overall musical structure, and then create the details within that structure. Various musebots assume roles within the creation and performance of each 10 minute composition. An *OrchestratorBot* decides which musebots are to be used in a given composition, based upon what the main *ParamBot* generates for the individual moments in the composition. A separate musebot—*PCsetBOT*—generates the harmony for each moment, based upon the complexity required by the *ParamBot*. Lastly, a *Conductor* keeps all the musebots coordinated in musical time. Each composition is unique, and generated on the spot. The musebots are “intelligent”, in that they have learned about their environment, and communicate their intentions and coordinate conditions for collaborative machine composition.

## **2. MUSEBOTS**

Musebots are pieces of software that autonomously create music, collaboratively with other musebots (Bown et al. 2015). A defining goal of the musebot project is to establish a creative platform for experimenting with musical autonomy, open to people developing cutting-edge music intelligence, or simply exploring the creative potential of generative processes in music. The musebot protocol is, at its heart, a method of communicating states and intentions, sending networked messages established through a collaborative document via OSC (Wright 1997). Musebot ensembles have been presented as continuous installations at a variety of festivals and conferences, the results of which have been described elsewhere (Eigenfeldt et al. 2015). These ensembles have modeled improvisational explorations, albeit with the potential for generative harmonic progressions.

## **3. MOMENT-FORM**

An alternative to traditional narrative structures for musical generation has been proposed by the author (Eigenfeldt 2016), specifically what Stockhausen called *Moment-form* (1963). Kramer suggests that such non-teleological forms have been used by composers such as Stravinsky and Debussy (Kramer 1988), while the author has described the use of *moment-form* in ambient electronic music (Eigenfeldt 2016).

A moment is comprised of a static entity—for example, a single harmony; moments avoid development and goal-directed behaviour, although the potential for processes to provide variation in the surface design is possible. Subsequent moments are contrasting, often dramatically, with one another, as their inter-

nal organisation and concerns must be different; as a result, changes between moments result in what Kramer refers to as discontinuity (Kramer 1988).

Moment form offers several attractive possibilities for generative music, including the notion that individual moments can function as parametric containers. Just as Stockhausen obsessively organised his material (Smalley 1974), the parameterisation of musical features within generative moments can delineate the moments themselves by applying constraints upon the methods.

## 4. MOMENTS

*Moments* is the author's first generative work that explores moment form in generative music through the use of musebots. Moments exists in two separate versions: the original for two Disklavier pianos, in which musebots send MIDI data to the mechanical pianos; a second version in which it generates all audio through Ableton Live. It is the latter version which is proposed here.

Musebots have demonstrated the potential to self-organise. However, *Moments* operates compositionally, in that it generate an entire musical form prior to each performance. This allows for an important benefit: a pre-cognition by all agents of the upcoming structure. Knowing a section is, for example, two minutes in duration, allows musebots to plan their activity within that time. This European premiere of *Moments* includes a visual musebot created by Simon Overstall, which both visualises and abstracts the musebot messages into generative images.

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