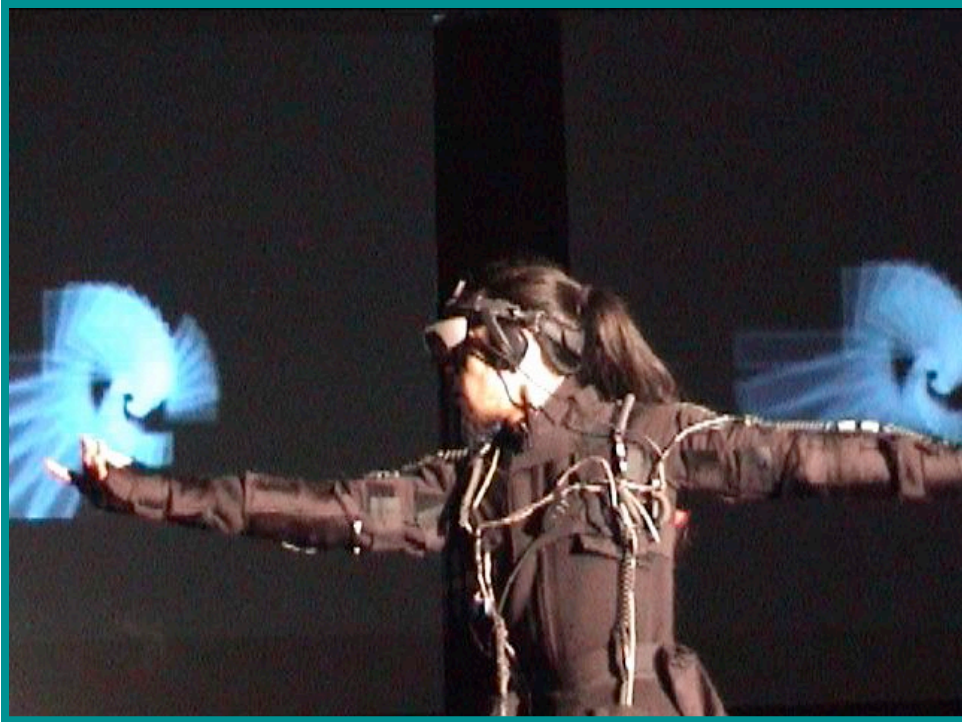


Suguru Goto

Virtual Musical Instrument and Composition



1. Introduction

I have been working numerous compositions and performances with Virtual Musical Instruments. These refer to a system that a gesture of performer is translated into electric signals. One may control sound or video image of computer with movement of body in real time.





"BodySuit", in which there 12 sensors on each joint of body. The performer doesn't hold anything on his hands, however, he can play as if he dances..'



2. Virtual Musical Instrument

One of Virtual Musical Instrument that I created is Virtual Violin "SuperPalm". There is neither string nor hair of bow. A gesture of performance with a violin is merely modeled. One of others is played with lights that are held by hands of performer. As he moves these lights in a space, he can modify sound and video images. The third one is "BodySuit" (Data Suite), in which there 12 sensors on each joint of body. The performer doesn't hold anything on his hands, however, he can play as if he dances.

Virtual instruments, or controllers, cannot produce sounds by themselves. They merely send signals that produce sounds by means of a computer or a sound module. They may be regarded as an interface

between the performer and the computer insofar as they translate the energy derived from body movements into electrical signals. At the same time however, they allow the performer to express complex musical ideas. With the help of a controller, a tiny gesture can trigger any number of complex musical passages at one and the same time in a real time context, whereas a traditional instrument can produce only a limited range of sounds.

3. BodySuit

I have chosen to focus on the use of virtual musical instruments in a performance context. One of the instruments I have designed is the "BodySuit", a suit fitted with bending sensors that are attached to each joint of the body. This suit is an ideal performance tool : it enables me to make wide, sweeping movements that can easily be observed by the audience.

A performer wears a data suit, on which 12 sensors are attached on each joint of the body. This data suit functions as an interface of gesture. Depending on a movement, sound and video images are changed in real

time. This differs from a traditional instrument and a controller. A player performs with larger movements, such as stretching and bending joints, twisting arms and so on. This gesture does not function like dance or theater. It contains, however, an element of "performance" within the live musical context. The gesture is not previously decided in a strict sense. An audience may observe an obvious difference of intensity of movement between a static section and a kinetic section in the composition.

4. Composition: o.m.2 – g.i. – p.p.

for BodySuit and Interactive Video

The sound for the original composition was generated from April until July in 1997 at IRCAM for instruments and computer. Some of the sections were modified later, and then adapted for use with BodySuit, creating this new version.

First the Max with ISPW on NeXT was mainly used to generate computer sound. The sound synthesis methods which are programmed for this composition are based upon additive Synthesis, FM synthesis and Granular Synthesis. These are now ported to Max/MSP. The algorithm is based on the idea to create mechanical texture which gradually transforms as time progresses. The parameters are decided with controlled random data which are sent through many levels of hierarchy. The Granular Synthesis was especially programmed to interpolate sound constantly.

This composition is based on the density of texture and the alternation between the dynamical and the

statistical aspect of the movement. The ideas of the composition are summarized in the title of which the initials mean!: o.m=Onomatopoeia and montage, both of them can be heard clearly in this composition, 2=second version, g=granular, i=interpolation!; p.p=poly-phase.

The mechanical textures are superimposed one onto another. At the same time this creates poly tempo. In each section the texture starts in one shape then gradually transforms into another. Not only in the sections, but also within the whole piece, the overall phase gradually transforms and intensifies.

The form is intentionally simplified, like the succession of "block type" sections. The static sections anticipate with the kinetic sections always following. These are abruptly alternated in this piece. This idea of form was originally experimented with in a previous composition. In this composition it is evolved to further possibilities.



For Further Information:

Article

<http://perso.wanadoo.fr/suguru.goto/PDFfiles/IRCAM-Article.pdf>

Biography

<http://perso.wanadoo.fr/suguru.goto/PDFfiles/SuguruGoto-E.pdf>

Movie

[http://perso.wanadoo.fr/suguru.goto/o.m.2-g.i.-p.p.\(small\).mov](http://perso.wanadoo.fr/suguru.goto/o.m.2-g.i.-p.p.(small).mov)

Web site

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