

# **"IMPROVISESSION-II" : A PERFORMING/COMPOSING SYSTEM FOR IMPROVISATIONAL SESSIONS WITH NETWORKS**

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**Abstract** This paper is intended as an investigation of new interactive environment in music. I will describe two types of performing/composing systems for improvisational sessions with networks and a concept called "GDS (Global Delayed Session) music". These systems are called "Improvisession-I" and "Improvisession-II", and this paper reports not only the basic idea but also the latest version and applications in education and entertainment.

**Keywords:** Music Informatics, Computer Music, Network Session, Improvisation, Algorithmic Composition, Entertainment and Education

## **1. Introduction**

My research called PEGASUS project (Performing Environment of Granulation, Automata, Succession, and Unified-Synchronism) have produced many original systems and realized experimental performances. Many special sensors were also produced for better human-computer interactions. The important concept of this project is the idea of composition in computer music, called "algorithmic composition" or "real-time composition". This compositional method is applied to these systems with the idea of "chaos/statistics in music". Many agents are running that generate chaotic or statistic phrases individually in the original software. The message from the human performer changes the chaotic and statistic parameters, triggers and excites the dynamics of chaotic/statistic generators. The improvisation of the human performer is important in these systems and performances. [1-4]

## **2. Listen to the Graphics, Watch the Music**

The next step of the research have produced a compositional environment with intersection and interaction between musical model and graphical

model. The keyword of the project was "listen to the graphics, watch the music", and the purpose was constructing the composition/performance environment with multi-media (Fig 1). The system consists of some types of agents that are linked by object-oriented networks. The 'control' agent exists in the center of the system. This agent generates the 'control messages' both to the sound agency and the graphics agency in time domain, spatial domain, and structural domain. The input messages of this agency may be divided into four types: (1) traditional scenario of performers, (2) sensor information of the performance, (3) real-time sampled sounds as the material of sound synthesis, and (4) real-time recorded images as the material to generate graphics. The composer can describe the scenario as the algorithmic composition in a broad sense with both sound and graphics. The platforms were SGI workstations connected with networks. [5-9]

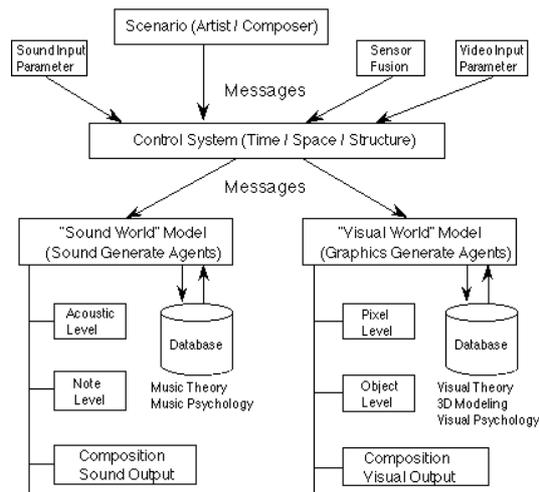


Figure 1. Concept of the multimedia system.

### 3. Improvisation-I

After these researches, I have produced the first experimental environment/system called "Improvisation-I". The system run with 24 SGI Indy computers through FDDI LAN, and softwares were developed with Open-GL, OSF/Motif, and RMCP (Remote Music Control Protocol) by C language. RMCP was produced by Dr. Masataka Goto [10], and the RMCP package is opened to the world on the web. The system seems like "drawing game" screen, and players can use mouse, keyboard and MIDI instruments (Fig 2). All players can play their own phrases, and can

broadcast their phrases to other players with improvisation via RMCP. In the experimental lectures of students of music course of Kobe Yamate College, there were many interesting results in the theme of entertainment and education. For example, a certain student liked inviting a specific partner and playing in private like a chat rather than participating in the music session in all the members. Or probably because it became that the phrase which student performs in session of all the members tends to be missed, there was a tendency for all the members' volume to increase gradually.

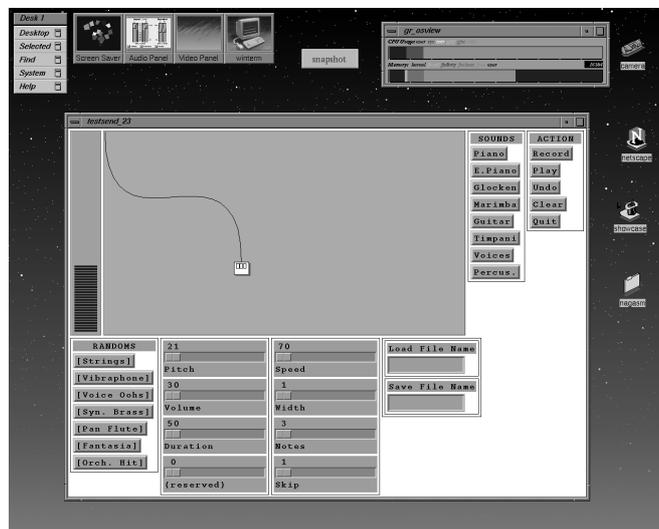


Figure 2. The screen shot of "Improvisation-I".

#### 4. GDS music

Arrangement of the problem about the research so far pointed out the following improving points. First, this software was interesting in musical education with some kinds of entertainment, but the required system is not popular with general environments in academic field. Secondly, the RMCP system required the "Time scheduling" methods which manages the synchronization with latency of networks, but both methods (RMCPtss [RMCP Time Synchronized Server] or NTP [Network Time Protocol]) seemed heavy for simple personal computers. And in order to absorb the possibility of the variation in delay by the network flexibly as the 3rd biggest subject, the necessity of reforming the concept of the music on condition of simultaneity itself has become clear.

Dr. Goto also advocated the concept of "the music which was late for the

difference" in research called Remoto-GIG [10]. However, the concept is extended further more flexibly and it came to build an idea called GDSmusic (Global Delayed Session music) here. I made unnecessary time management which RMCP demanded, and the users by whom network connection was made enabled it to enjoy a music session in the framework of GDSmusic, without caring about the delay according to each. Of course, for that, the concept of the simultaneity which was the traditional foundations of a music session is thrown away, and the new view of playing in musical session with "1-2 measures past shadow of a performance of the partner" is needed. The idea of this GDSmusic was specifically first realized as the system "Improvisession-II" introduced in the following. However, the new entertainment of not only this but a network era, i.e., a possibility of saying that many and unspecified persons enjoy themselves through a network like a chat, is expected further.

## 5. Improvisession-II

After these experiments and researches, I have newly produced the second experimental environment and system called "Improvisession-II". The platform have changed from SGI Indy computer to Macintosh computer connected with Ethernet (Fig 3).

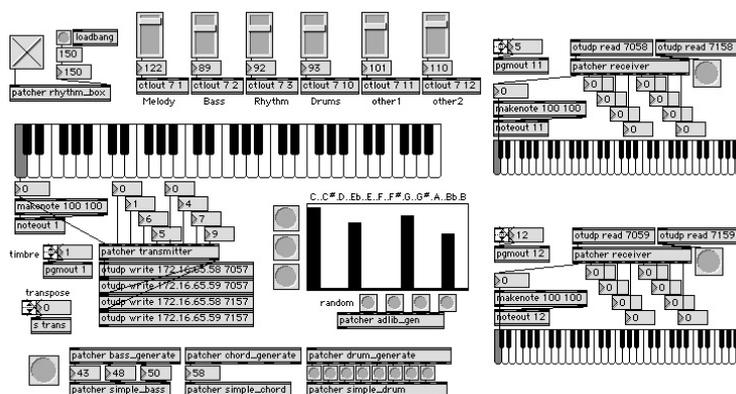


Figure 3. The screen shot of "Improvisession-II".

This software is developed with Max4/MSP2 (by David Zicarelli) environment using OpenSoundControl ("otudp" objects) developed by CNMAT [11]. The "otudp" is a UDP object for PPC using Apple's OpenTransport networking system. All players can play their own phrases, can play with chaotic/statistic generators and can communicate with other performers with improvisation via UDP/IP. As a difference







Consequently, the fellow participants who has not taken the synchronization of timing to each other can enjoy a music session with a performance of other participants who were late and arrived, forming each performance.

## 6. Summary

I described two types of performing and composing systems for improvisational sessions with networks and a concept called "GDS (Global Delayed Session) music". I will develop new sensors for this system as new human-computer interfaces and research new possibility in network entertainment in music and multimedia.

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