Suguru Goto

1. Explanation of robots

The 5 robots play the musical instruments. These consist of Snare Drum, Bass Drum, Cymbal, Gong, and Pipe. These are created with the conception and the design by Suguru Goto and with a technical help by Fuminori Yamazaki, iXs Research Corp. in 2003. These works were already exposed in exposition and performed in a concert during a festival at Xebec Hall in Kobe, Japan, in March 2003 (http://dspss.iamas.ac.jp, http://www.xebec.ac.jp).

These robots perform the percussion instruments, instead of human players. These robots are connected with a computer and controlled by the program in a computer. These can play very complex music which can not be done by a human performer. These can play much faster or can play forever without any rest. This may allow to create music which never be able to listen in the past. These can also controlled by a gesture of human with an application of Virtual Reality System with Data Suite or a motion capture system. Movements of human are analyzed with a computer, then this is transmitted to the robots. In other words, a gesture that a human pretends to play an instrument in air, can trigger the robots, which really play the instruments instead of human.

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2. Works

a. Concert

Using the above-mentioned robot, the artists show their works in public. How can one coexist with a robot, and what could the relationship with human be? What are the differences between a human player and a performance of a robot? Can one of them exceed another or what is the point of disadvantage in another? We may explore how much the present technology of robot may respond to these, while we explore the difference between human gestures and robot acts for music in which the advanced intelligence is necessary.
A robot can perform correctly and faster than man. Moreover, man is not possible to repeat the same pattern permanently, but a robot can do so. However, a human player may be able to perform with delicate expression of music. When a robot actually performs simultaneously with a human player, we can perhaps observe its own special kind music expression, such as mechanical aspects.
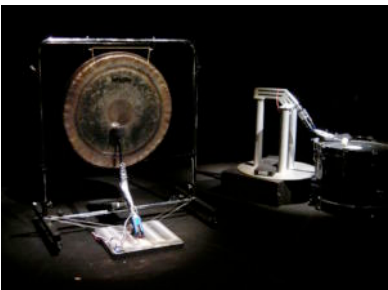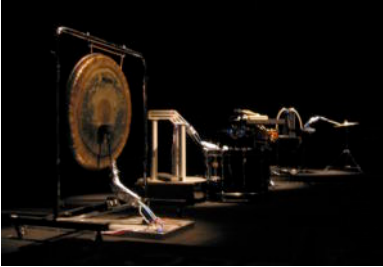
b. Exhibition

We actually made their works using the above-mentioned robots in this exhibition, and carry out the demonstration of the robot's possibility. Five robots are always exhibited. The mode in which a pattern and music were prepared beforehand, and a public can also choose the mode of performance. The former one is a mode in which some patterns and some compositions are written in Max/MSP. The latter one is a mode that a public actually can perform the robots by clicking the screen of a computer with a mouse and so on in real time. The algorithms of Max patches are prepared by the composers.

3. About the Robots

For this project, we have developed our own robots with our original design. These has been made by a robot company, iXs research Corp. These are based upon the idea that the robot plays the acoustic musical instruments. Each robot resembles a part of man's body, such as an arm and a leg etc. and imitates the gesture of human's performance. These robots are controlled by a computer with a program, Max/MSP/Jitter in real time. Unlike a robot which walks himself by his two feet, or a robot which judges and pursues an object himself, the artificial intelligence of these robots are minimized and these are considered that these can be freely changed by programming with Max/MSP/Jitter and these can be flexibly changed to have various functions in order to be more advanced intelligence. These emphasize a viewpoint of gesture for musical performance, in another words, an act, rather than these depend on the portion of intelligence for maintaining balance itself, or judging an obstacle. Man's performance act apparently looks like a simple motion, but is indeed complicated in fact. A usual professional player has received severe training since his childhood, and in order to perform a composition he has to have many practice and ability sufficient. The points are the musical expression capability for performing music, as well as how much the muscles of the body are delicately controllable for the reason. Can we reproduce the complicated performance act that is based on the long training of the player, and can we also exceed the human player with a robot? In order to create good sound by the musical instrument, what sort of delicate motion, and how are these required to put in speed and power? What are the exact mechanism of a motion of man's muscles and the work of a brain to it? How could it be possible to reproduce, such as good performance and good music? When we research these then realize in an experiment, we can perhaps discover the mystical mechanism how man has developed the brain for a long time. That is to say, these are not at the stage of mechanism, such as walking, holding etc. which is for a portion of primitive brain, however these are the portion of advanced brain for sensitivity, emotion and the very delicate body control. It is a new filed of research, which are hardly solved in the past.
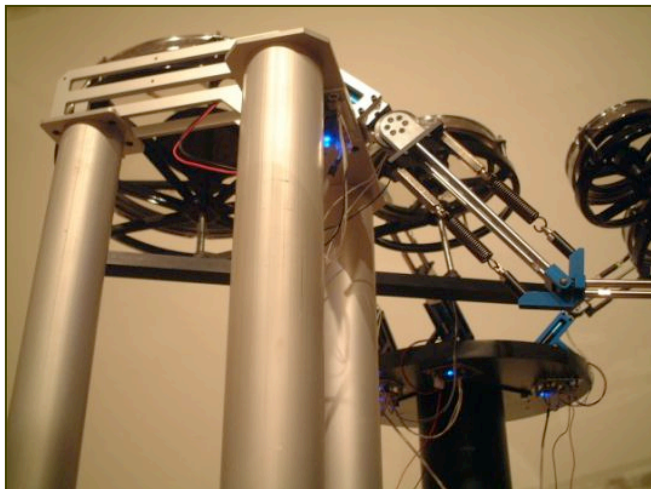
**Suguru Goto
IRCAM
1, place Igor Stravinsky
75004 Paris
France
Tel. +33 1 44 78 48 43
Fax +33 1 44 78 15 40
Email:
Suguru.Goto@ircam.fr**

For Further Information

Movie:

http://perso.wanadoo.fr/suguru.goto/RoboticMusic(small).mov

Web site:

http://abrb.freefronthost.com/

Biography:

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