

Sequencer404: A Networked Telephonic Composer

David Jimison

Digital Media

Georgia Institute of Technology

686 Cherry Street

Atlanta, GA USA 30332

+1 404 791 7711

David.Jimison@gmail.com

Travis Thatcher

Music Technology

Georgia Institute of Technology

686 Cherry Street

Atlanta, GA USA 30332

+1 678 613 1019

recompas@yahoo.com

ABSTRACT

This paper describes an application for multi-user control of a musical sequencer through telephony and Voice Over Internet Protocol (VOIP). Participants phone into a central server and through the use of the numeric buttons of their device, control the rhythm and pitch of their selected instruments, collaboratively generating a musical composition.

Keywords

Mobile music, networked music, telephony, sequential composition, collaborative music

SOFTWARE COMPOSITION

Sequencer404 is a software application that forms a VOIP network between four participants and itself. Users engage in the orchestration of a 16-step 4-measure continual composition, similar to those found in older or “classic” synthesis/sequencing systems, such as Roland’s TR-808.

The Skype VOIP program connects the Public Switched Telephone Network (PSTN) to the Internet. The Sequencer404 establishes four such connections, translating audio input from the phones into controller events, and pipes the audio of the mixed composition back out via Skype to the participants’ phones.

After phoning the Sequencer404 number, users select their instrument (Drums, FM Synth, Bass, Sampler.) Users are then connected to the sequencer output. The resulting music generated by all four connections is the only audio listeners share except during intercom use (see below.)

Buttons 1-9 trigger sound samples of varying pitch and type dependent upon the instrument. When hit, the note plays (approximately 600 milliseconds total latency); this event is quantized and added to the sequencer control list. Participants can erase past notes by holding '0' during that event, or can erase their entire list, by pressing '0' four times in rapid succession.

The ‘*’ key operates as a tap tempo. Tapping slower than the current tempo, slows it by five beats per minute (BPM), tapping faster does the opposite.

Pressing ‘#’ toggles the user’s audio input between a system controller and a microphone with the intent of broadcasting some sort of live accompaniment to the music (e.g. live vocals) over the whole system.

AESTHETICS

Sequencer404 embraces the low fidelity audio quality of phones in its aural palette. These compositions are intended as expressions that explore these limitations, where too many simultaneous sounds distort into noise.

Sharing sound through invisible networks, as participants wander through various physical spaces, investigates collaborative presence through such a network. As opposed to collocated collaboration, the medium becomes the singular mode for interacting and communicating. This interplays with the physical environment of the participant, which informs their input to the group.

CONCLUSIONS AND FUTURE WORK

Sequencer404 enables networked musical collaboration amongst mobile non-collocated groups, building upon existing multi-user musical interfaces and networks [1, 2]. Sequencer404 explores issues relating to Weinberg’s notion of synchronous centralized networks [3] and musical collaborating using limited input channels.

In future work, various methods of machine listening may be employed in order to make the interaction and resulting output more musically interesting. They will also expand upon the infrastructure of the project, allowing more participants to engage in the application together.

REFERENCES

1. Burke, P. *Jammin’ on the Web – a New Client/Server Architecture for Multi-User Musical Performance*. In *Proc. of the ICMC, 2000*.
2. Ramakrishnan, C., Freeman, J., Varnik, K. *The Architecture of Auracle: a Real-Time, Distributed, Collaborative Instrument*. In *Proc. of NIME 2004*.
3. Weinberg, Gil. *Interconnected Musical Networks: Toward a Theoretical Framework*. *Computer Music Journal*. 29:2, 23-39, Summer 2005.

BIOS:

David Jimison is a PhD candidate in the Digital Media program at Georgia Institute of Technology, where he leads a research team in Mobile Technology. His research interests are in locative media, mobile games, and collaborative music.

Travis Thatcher is currently a graduate student pursuing an M.S. in Music Technology at the Georgia Institute of Technology. He has been doing research in human computer interaction for live performance and interactive sonification. Thatcher has performed as an electronic composer and musician for the last five years and as a saxophonist for the last ten years. He is also an experienced computer programmer; he received a BS in Computer Science from Georgia Tech in Spring 2005 and has worked extensively in industry as well.