”J.B. REMEMBERS J.B.”: A SYSTEM FOR DYNAMIC IMPROVISATION ACCOMPANIMENT

Jeff Albert
Georgia Institute of Technology
jeff.albert@music.gatech.edu

ABSTRACT

This paper explores the intersection of technical mechanisms and artistic expression in interactive computer music, focusing on the creation of a piece/system that enables a dependable performance sensation for improvising musicians. The piece/system, ”J.B. Remembers J.B.,” dynamically generates accompaniment that reacts to the performer’s improvisation while maintaining a consistent sonic aesthetic.

1. INTRODUCTION

”Does it still sound good if I do not know how it works?” This is a question I often ask myself when working on interactive computer music. It is too easy to succumb to the temptation to rely on the technical mechanism to be the interesting part while depriving the actual sounds of the attention they deserve. This piece started with an interesting technical idea that did not sound as good as I had hoped.

2. GOALS OF THE SYSTEM

Musical systems or settings are commonly developed with a particular sound or set of sounds in mind. A sonic aesthetic if you will. Many improvisers create music in a similar way, with a sonic aesthetic in mind, but another common goal of improvising musicians is the feeling one gets when playing the music. This could be called a performance sensation. How do I feel when I play this music? The system underlying the piece ”J.B. Remembers J.B.” aims to allow for a consistent performance sensation that includes the feeling of freely improvising while still creating a consistent sonic aesthetic. This is done by dynamically creating an accompaniment that listens to the improvisation and reacts to the performer, yet also creates unexpected musical events with which the improviser can interact. The goal is a feeling of free improvisation for the player with a dynamic accompaniment that nudges toward a consistent aesthetic experience that can be lacking in completely free improvisations.

3. THE RANDOMNESS PROBLEM

Improvisers like interaction, and unexpected or surprising interaction is highly valued. It can be tempting to equate unexpected with random, and it is easy to create seemingly random procedures with computers, so many computer based musical improvisation agents use some form of random or weighted random decision making. George Lewis’s 2007 article includes the words ”Intending Chance” in the title. [1] The problem is that randomness is only musically interesting some of the time, and the rest of the time it is less compelling.

3.1 Identifying Phrases

My previous work in interactive computer systems has focused on capturing and storing data on pitch and rhythm, then manipulating those data to create musical events in dialogic interaction with the human improviser. [2] That work suffered from ”The Randomness Problem.” One of the initial goals of this work was to be more aware of musical phrase structures as a mode of organization. While there is work on musical phrase segmentation [3] trying to apply these techniques in real-time can be a challenge.

3.2 Enter the first J.B.

In October of 2023, I heard John Bischoff give a presentation that included his explanation of his piece ”Bitplicity.” [4] In this piece he improvises phrases on his pulse wave oscillator instrument while marking each phrase beginning and end by pressing a key on a MIDI controller. The computer program then resynthesizes these phrases and he plays in duo with these resynthesized phrases. This concept sparked the idea that would develop into this piece.

4. J.B. REMEMBERS J.B.

Technologically this piece is programmed in Max for Live and hosted in Ableton Live. There are multiple ”phrase memory” modules, each having slight variations from the others. Each of these modules keeps track of the pitches played by the performer and the elapsed time between events (or notes). The original module required the performer to use a MIDI foot-controller to mark the start and end of each phrase. This idea was taken directly from Bischoff, although technically implemented in a different way. After some initial play testing, I realized that the requirement to physically mark the phrase ends by tapping a controller could significantly interrupt the musical flow of the improvisation; it required the performer’s focus to be in two places. In response to this, I developed other phrase modules that can operate independently of controller input from the performer. Each of the phrase modules extract pitch and duration information from the real time audio

input from the improviser, and outputs monophonic MIDI note data that can be routed to any softsynth sound in Ableton Live. These modules have somewhat arbitrary phrase lengths which differ on each module, and the data is manipulated in differing ways with regards to order and direction of reading of the pitch and rhythm data.

One module plays back notes in order from a collection that is 20 notes long. The other module records a 15 note long collection and plays back from it in a palindromic order. The improviser has foot pedal controls that can separately control when each module is playing as well as when each module is listening. This allows the computer to play from a continuously updating pool of notes, recording the performer's note information in real time, or for the performer to "freeze" the set of notes in the pool at any given point. This also allows the performer to let a module continue listening and gathering data, but not playback.

While I initially thought that the way the pitch data were manipulated would be the factor that would determine musical success, in my early prototypes I quickly realized that choices of software instrument sounds and rhythmic placement were more important. The sound world became more important than the specific order of pitches. The sets of pitches used matter greatly but the sounds used to play them are equally as important. It also soon became apparent that where the notes started within the grid of the rhythmic accompaniment was vital to the overall effect. The durations of the notes in the pitched aspects of the dynamic accompaniment are taken from what the system hears from the improviser, but the starting times in relation to the groove grid have been quantized to align with the drum groove parts.

4.1 J.B. No. 2, but Soul Brother Number 1

An important aspect of the consistent sonic aesthetic that I wished to create in this piece is rhythm. Groove based music has played an important role in my musical life and informed my creative activity in defining ways, so I wanted groove to be present in this piece. As I riffed on title ideas and thought about how I wanted to incorporate musical groove, I thought of James Brown. [1] His initials fit perfectly with the title idea of "J.B. Remembers" which referred to John Bischoff and the musical process of remembering phrases, and his music provided perfect inspiration for the rhythmic aspects of this piece, which use some of the features in Ableton Live to lend a certain lifelike unpredictability to the dynamic accompaniment.

This unpredictability comes from the chance operations in Ableton Live, which allows for each note in a drum pattern to have a particular chance of occurrence. At 85% the pattern sounds complete, but the individual notes vary. At 15% the notes are all in time, but the pattern is not obvious. The piece uses four different clips of the drum pattern with chances of occurrence of 13, 25, 50, and 85 percent. The Follow Action feature is weighted to cause the clips to generally move from sparse towards dense over the course of the piece, with the possibility (probability) of some slippage from dense back to toward sparse at times. An Ableton groove setting is applied to additionally vary the dynamic and time placement of the drum parts.

[1] "Soul Brother Number 1" is the name of a 1988 James Brown compilation album, and one of his many nicknames, which also included "The Godfather of Soul," and "The Hardest Working Man in Show Business."

4.2 How it Started, How It's Going

Very few creative projects have a finished form that perfectly aligns with their initial intentions, and this piece is no exception. What started as an exploration of techniques to manually mark phrase lengths in an improvised piece with computer quickly became an exploration of the systematic aesthetic choices that made improvising within the system (and hearing the resulting music) enjoyable. The next steps in this research will involve trying to automate phrase detection in real time in a way that can be aesthetically successful, technically feasible, and not distracting to the performer.

5. CONCLUSIONS

Technologically mediated creativity is always a back-and-forth between technological considerations and aesthetic concerns. An advance in tools and techniques gives new artistic ideas which make us imagine new tools, which then give new creative ideas, in a never-ending techno-creative feedback loop. I originally though this piece was about developing a new technical tool to mark musical phrases while improvising, but it ended up being more of an aesthetic exploration. An exploration that has better prepared me for my next technical experiments.

Acknowledgments

I would like to thank John Bischoff for the idea, James Brown for the music, Katie Young for inviting me to play on that concert, and Alexandria Smith.

6. REFERENCES

[1] G. Lewis, "Mobilitas Animi: Improvising Technologies, Intending Chance," *Parallax*, vol. 13, pp. 108–122, 2007, 4.

[2] J. V. Albert, "Interactive Musical Partner: A System for Human/Computer Duo Improvisations," Dissertation, Louisiana State University, Baton Rouge, LA, 2013.

[3] O. L. Martín Hartmann and P. Toiviainen, "Interaction features for prediction of perceptual segmentation: Effects of musicianship and experimental task," *Journal of New Music Research*, vol. 46, no. 2, pp. 156–174, 2017. [Online]. Available: https://doi.org/10.1080/09298215.2016.1230137

[4] J. Bischoff, "Bitplicity," 2021. [Online]. Available: https://artifactrecordings.bandcamp.com/album/bitplicity-art-3012-2021