

”MyJazzBand” – an interactive virtual jazz band

Rui Dias¹

¹ Instituto Politécnico de Castelo Branco (Polytechnic Institute of Castelo Branco)
ruidias@ipcb.pt

Abstract. MyJazzBand is a multi-user interactive music installation that allows up to four users to play in a virtual jazz band, using custom-developed software and graphical interface in a multi-touch display. The virtual jazz band consists of three solo instruments and piano, which the users can play, and a virtual bassist and drummer that are generated automatically. The software was developed in Max/MSP and Processing.

Keywords: Jazz, computer mediation, interactive musical interfaces, algorithmic music generation.

1 Introduction

The installation consists of specially developed software for a multi-touch screen that invites the users to experience improvising in a jazz band. It is a direct development of the algorithms and concepts developed for the GimmeDaBlues application for iOS devices [1].

It was initially presented at the “Noite Branca” art festival in Braga (September 2nd to 4th), at the D. Diogo de Sousa museum. It was presented at the “BRG Collective” show at the Teatro-Circo, in Braga (September 30th and October 1st) and at the “MMXX” event, at FEUP, Porto, for the celebration of the twentieth anniversary of the Multimedia masters program of the University of Porto (November 2nd).

2 Description

MyJazzBand was developed with the aim of exploring the potential of computer mediation and algorithmic development for collective musical contexts. The software consists of specially designed algorithms that simulate some of the musical procedures and idiosyncrasies of each instrument in traditional jazz music. The algorithms include the solo instruments, the piano, the bass and the drums. The solo instruments - trumpet, alto and tenor saxophone - and the piano are to be played by the users, while the bass and drums are totally automated.

A traditional 12-bar blues form runs in an internal sequencer, and the song position and harmonic grid is parsed to all the instruments. Each instrument algorithm then uses this data in a specific way, depending on its own idiomatic features and playing

procedures and needs. More detailed explanation of the specific algorithms can be found in [1], [2], [3].

Interface

The data acquisition system uses a large-format multi-touch screen display with custom-designed graphics that respond in real time to the user input. The interface presents four interactive virtual keyboards, one on each side of the screen. Each keyboard has a different instrument assigned, represented graphically, namely: muted trumpet, alto saxophone, tenor saxophone and piano. The virtual keys have the approximate size of a normal piano keyboard, and each keyboard has twelve keys. Similarly to the virtual keyboards in Pocket Band, these keys do not have static assigned notes, but instead are changing dynamically, according to the current harmony from the song at any given moment.

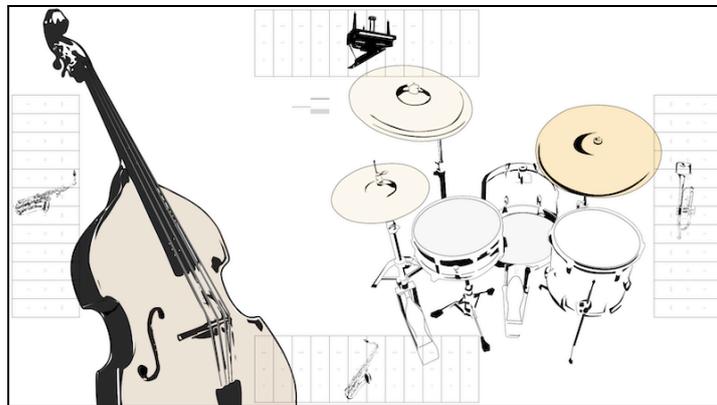


Fig. 1 – “MyJazzBand” graphical interface.

Pressing a key changes its color, and triggers a graphic animation of the pressed keys flowing upwards, out of the keyboard. This provides a visual feedback that adds esthetical value, making it more attractive visually, but also contributes to a sense of group collaboration, as the notes flow to the middle area, where the bass and drums are, and where all the keyboards flow to as well. The bass and drums, although not playable by the users, respond graphically to the musical events they are producing, contributing to the understanding of what is happening.

In the previous presentations, the multi-touch interface used was the Edigma¹ Displax 47”. Inside its case, the Displax hardware couples two different devices: a normal LCD screen, and a touch sensing transparent surface, integrated between the screen and the top glass surface. The communication is done to the computer by USB, for the touch data, and by HDMI or VGA, for the screen.

¹ <http://www.edigma.com/home>

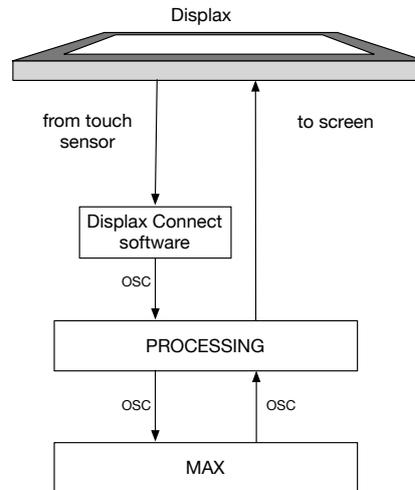


Fig. 2 - Communication between the sensor, software and screen in MyJazzBand.

The touch data is parsed by Edigma's own software, Displax Connect, and sent using OSC/TUIO² format to MaxMSP. After the corresponding data is sent and processed by software, the processed results are sent to Processing by OSC messages, that then uses it to create the graphical feedback. There was a noticeable latency between the touch and the response, but it is fast enough so that it still allows a quite responsive experience. Although the Displax itself can sense up to 40 distinct simultaneous touches, this Max patch only uses five: one for each keyboard area on the trumpet and saxophones, and two for the piano.

References

- [1] Dias, R., Marques, T., Sioros, G., & Guedes, C. (2012). GimmeDa Blues : A n Intelligent Jazz / Blues Player And Comping Generator for iOS devices. *CMMR London 2012* (pp. 482–490).
- [2] Dias, R., Guedes, C. A contour-based walking bass generator. *Proceedings of the Sound and Music Computing Conference 2013, SMC 2013, Stockholm, Sweden* (pp. 305-308).
- [3] Dias, R., Guedes, C., & Marques, T. (2014). A computer-mediated Interface for Jazz Piano Comping. In *International Computer Music Conference* (pp. 14–20).

² <http://www.tuio.org>